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Key to Future Wealth

NEW and improved machinery, more and more mechanical power in the hands of individual workers—only thus can the wealth-creating potentialities of any industrial civilization be exploited. Only thus can the American productive machine shoulder the unprecedented burdens which have been thrust upon it. This simple truism has been dimmed by emotional outbursts on such secondary factors as profits, prices and volume of production.

The evolution of industrialization has never been uniform. It's a matter of spurts, a cyclic process. This country's industrial machine has suffered a six-year binge, a distorted period of capacity production with cost a secondary factor. Now comes the time for the cycle to shift—and shifting it is, ponderously and irresistibly. Again cost becomes a primary factor. And only with the intense concentration on technical factors, on new and better automatic power-driven production machinery, on retooling at a costly and unprecedented pace, can manhour productivity be quickly pushed to new high levels. Only the new machine can rationalize the awful mortgages on present and future production—the peak public and private debts, the intense individual longing for higher living standards, the heavy military burden, the expanding pace of foreign relief and rehabilitation.

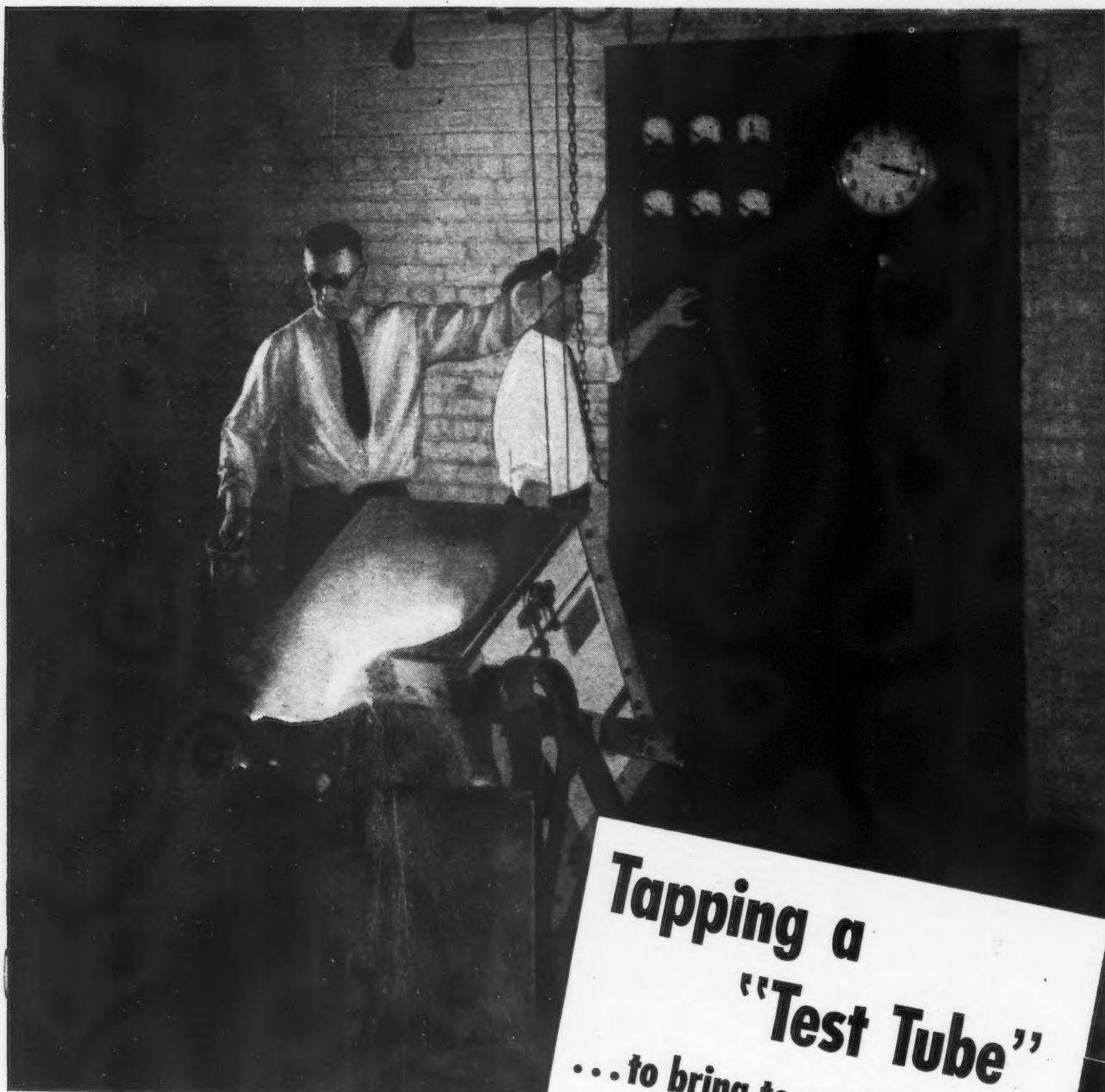
Forced draft production during the war and in the two-year postwar period blurred a basic lag in productive efficiency. Surprisingly enough, in agriculture, trade, railroad transportation and mining, the productivity records have been excellent. In 1946 they were some 25 to 35 per cent above 1940 levels. In poor contrast, however, the manufacturing branch of American industry actually showed a small decline in the 1940-46 interval, with the key automobile industry suffering an apparent serious decline of 25 pct.

It's a strange phenomenon, indeed, to see manufacturing productivity lag so far behind other sectors of the economy when the opposite held true steadily through the 1900 to 1940 period. Perhaps it has been partly a lag peculiar to the postwar transition period. Labor-management friction and all its attendant disorders must share some of the blame. But, major responsibility lies in the tremendous wartime productive expansion based on prewar machine designs. Furthermore, an over-anxious post-war market has tended to dampen enthusiasm for costly retooling.

Living standards advance not by working harder or more skillfully but by constantly devising new and better machine tools and productive equipment to bolster human hands with vast amounts of mechanical energy. Thus has the economy expanded.

More than 50 pct of industry's machine tools are over 12 years old. Too many industrial plants stretch the write-off of machine tools over a period of some 20 years, a practice which discourages the scrapping of old and the buying of more efficient tools. While the last quarter of 1946 showed a healthy rise in business expenditures for new and improved machinery and equipment, it is imperative that this trend must increase in 1947, irrespective of temporary emotional upsets in the economy. For only thus can the American economic system be a dynamic, growing thing. There is no other way to meet the challenge of the future—the challenge of more jobs, sustained profits, liquidation of war's destruction, higher and higher living standards for all.

T. W. Lippert



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**INLAND
STEEL**

- ▶ A large Chicago steelmaker is using 35-ton electric furnaces to melt 1020 carbon steel for an automobile maker in Detroit. Heat times average around 5 to 6 hr. Rimming action of electric furnaces heats are said to be exceptionally good considering the carbon contents. Precise control now permits for the first time correlation between fabricating properties and sulfur content.
- ▶ The Navy is considering atomic powered battleships with a main armament of a rocket thrower capable of firing a 45-ft rocket to an altitude of 200 miles. The rocket will be vertically launched and jet stabilized, resembling the V-2 but with a far greater range.
- ▶ Dept. of Justice plans for pressing investigation of 35 larger corporations in various fields with a view to anti-trust prosecution have been slowed down. The powerful Senate Appropriations Committee has warned the trust-busters to go slow until conditions are more settled, and has backed up its edict by holding 1948 anti-trust funds to 1947 levels.
- ▶ A recently completed survey shows that the average five-room house contains over 4500 lb of castings.
- ▶ With its surplus inventories down to \$9 billion, WAA officials are disturbed over probable dumping of an additional \$5 billion in its lap should Congress—as now expected—scrap plans for compulsory training. This would knock out WAA's plan to close shop by the Spring of 1948.
- ▶ Are luggage carriers on the top of cars coming back? One producer is already using a swanky carrier on the top of a country club type model; others have expressed sufficient interest in the application to ask suppliers for quotations. In one case, chromium plated carbon steel tubing is specified; a second producer is inquiring about stainless steel tubing for this application.
- ▶ With the bugs ironed out of high speed direct gas heating on its seamless tube production line an eastern manufacturer now reports substantial cost reductions coupled with increased output and improved quality of the finished tubing.
- ▶ Cost reduction in the handling of automotive pistons is predicted for a honing process refinement that automatically controls finished bore size in automotive cylinders. Much of the former selective fitting and stacking will be eliminated.
- ▶ Vibration testing of machine tools, blowers, turbines and similar equipment is one of the newest and fastest moving trends in materials testing. Not only are more and more manufacturers using it in design and production stages but some users have adopted it as part of plant preventive maintenance programs.
- ▶ High pressure die castings, once almost entirely restricted in the light gasoline engine field to outboard motors, have replaced iron sand castings in the West Coast plant of an engine manufacturer who turns out 10,000 light industrial gasoline engines a month. Rising foundry labor rates and the ability to change models easily are two reasons for the change.
- ▶ Manifestations of the British steel shortage are now cropping up to the embarrassment of all concerned. A large ship and engine builder, getting only 50 pct of his requirements, is planning to lay off workers.
- ▶ Further evidence of Argentine efforts to boost steel capacity is the Italian decision to sell the remaining assets of the Cornigliano Ligure steel mill near Genoa to Argentina and ship them to the South American republic.
- ▶ Italian and South African steel and mining officials will soon get together to discuss the possibility of close cooperation between the two countries in these fields.
- ▶ Great Britain has received a sample shipment of iron ore from French Guiana, where unexploited reserves are said to total 2 billion tons. Rumors are rife in Paris that a joint American-French-English company will be formed to exploit the mines, but the present management has so far denied the story.
- ▶ Underwing fueling equipment developed by Parker Appliance Co., promises to speed airline schedules by cutting as much as 75 pct from present refueling time.
- ▶ Add to the uses for wartime mine detectors currently being sold as surplus their proposed use in locating lost outboard motors now reposing at the bottom of lakes throughout the country.

... Induction Hardening Steel

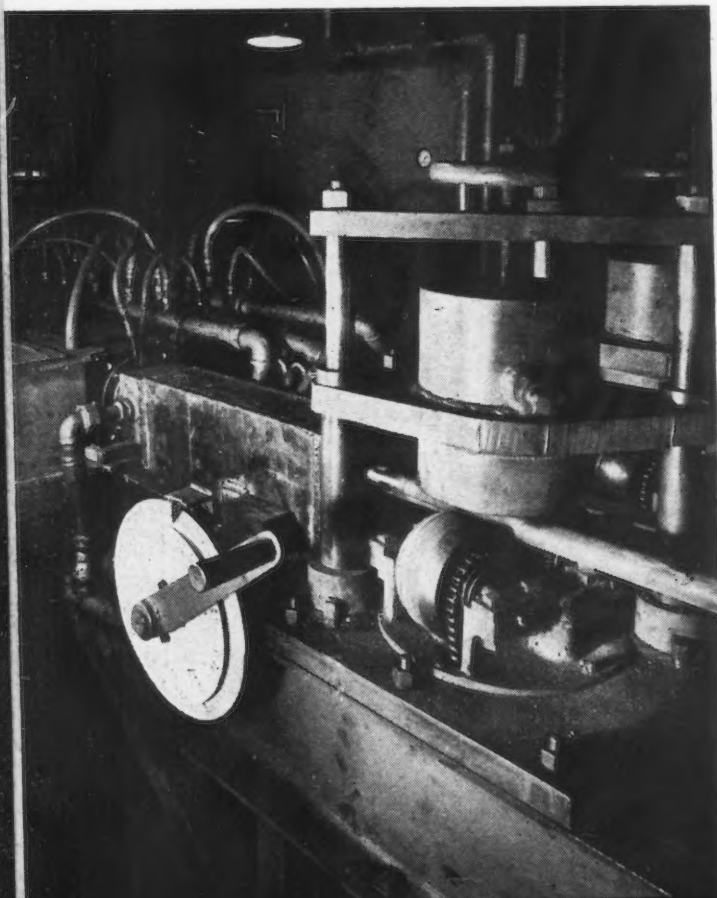
The first steel plant installation of induction heat for hardening cold-finished steel bars, made at the Hazelwood plant of Jones & Laughlin Steel Corp., is described in this article. This process is said to provide bars of unusual uniformity of hardness, section size and surface quality, and to practically eliminate distortion and scale. The author discusses herein the heat source, special bar handling equipment and processing steps.

By JOHN F. WILSON

Ohio Crankshaft Co., Cleveland

THE first steel mill application of induction heating for hardening cold-finished steel bars was completed early this year at the Hazelwood plant of Jones & Laughlin Steel Corp., Pittsburgh. The induction hardening process, developed by Ohio Crank-

FIG. 2—Crank in the foreground adjusts the unit's 34 rollers to the size of the stock to be processed. Above the crank is the quench chamber, and to the left of this chamber are the coil boxes with hoses for cooling water. One set of pinch rollers is also visible to right of crank.



shaft Co., Cleveland, was first installed 4 years ago at the Caterpillar Tractor Co., Peoria, Ill., but the first steel plant application is the J&L installation described in this article.

The J&L installation is designed to provide bars of unusual uniformity, sectional accuracy and surface quality to exceed the exacting requirements of purchasers of heat-treated barstock for use in automobiles, tractors, domestic appliances, business machines and numerous other applications where studs and shafting are required. Bars are sold either in the hardened or hardened and drawn condition, whichever the user prefers. Aside from the complete uniformity obtained, another benefit derived from this method is the practical elimination of distortion and scale.

The high-frequency power source is a 125 kw, 10,000 cycle motor generator type Tocco induction heating unit manufactured by Ohio Crankshaft Co. Ohio Crankshaft also designed the first inductor coils. The ingenious fixture, fig. 1, which actuates the bars through the inductor coils, was designed and built by J&L engineers to expedite the completion of this installation.

The mechanism is suitable for treating round bars in lengths of 10 to 24 ft and the following diameters have thus far been successfully processed; $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{3}{16}$ and $1\frac{7}{16}$ in. and J&L engineers expect to go to 2 in. diam stock very shortly. Adaptations are also being readied to permit the processing of flat, square and hexagonal stock, although this is still in the early stages of experimentation.

The installation operates in the following manner: A batch of bars is loaded by a crane onto the fixture platform. The 34 rollers are adjusted for the bar size to be processed by turning a single crank (fig. 2) which is connected to all rollers both in front of and behind the inductor coils. The pinch rollers fore and aft of the coils are adjusted by a turn screw and the coils (fig. 3) are raised or lowered to the proper elevation for the size bar to be processed. The power is

Bars at J&L . . .

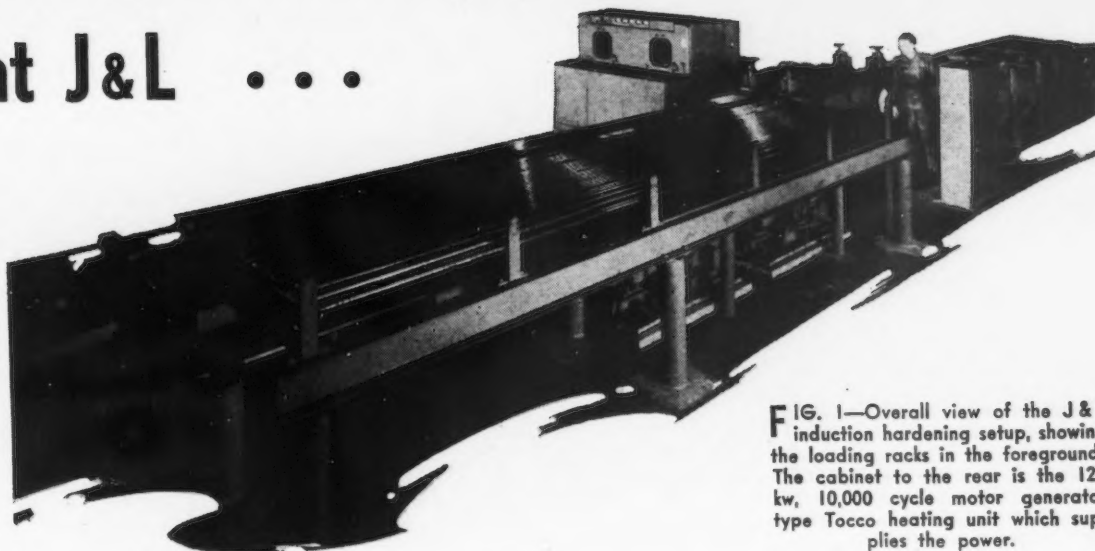


FIG. 1—Overall view of the J&L induction hardening setup, showing the loading racks in the foreground. The cabinet to the rear is the 125 kw, 10,000 cycle motor generator type Tocco heating unit which supplies the power.

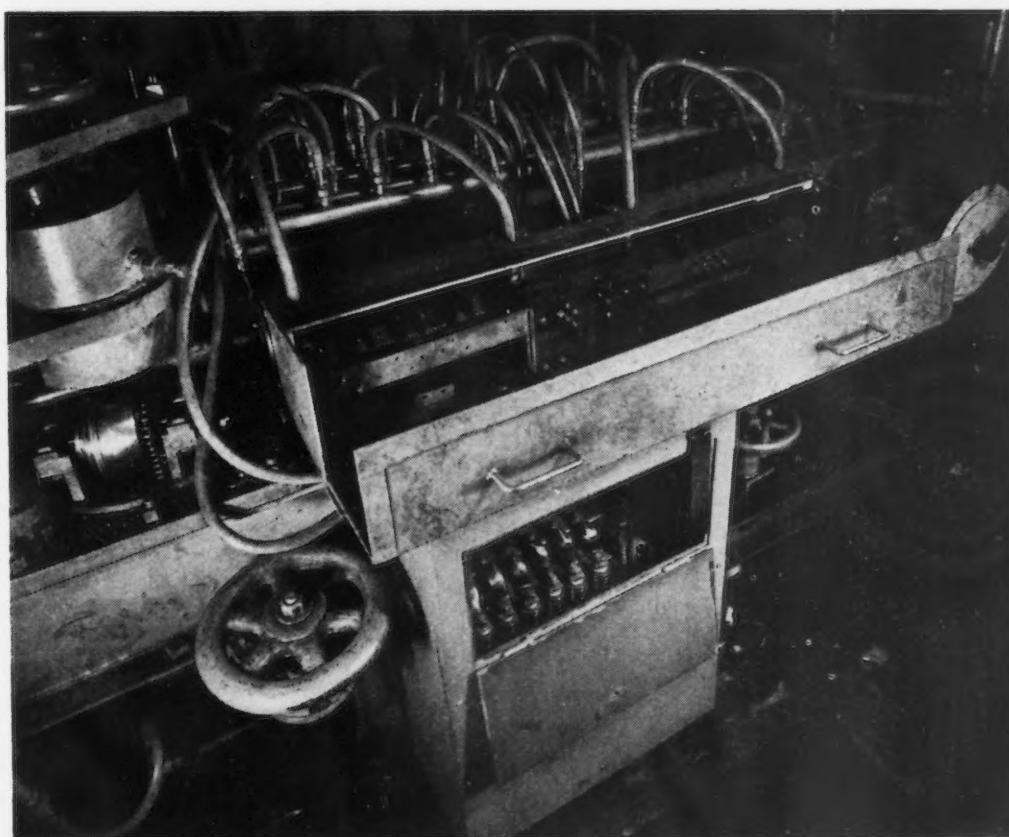
then applied to both the induction heating unit and mechanical fixture and the bars start through the coils.

The action of the mercury type switches (fig. 4) insures continuity of the process. As a bar passes the first of these switches, an elevating arm is raised automatically to receive a second bar. As the bar passes the second switch, the elevating arm lowers the second bar into place on the rollers. The third mercury switch is a safeguard to insure that the

second bar is following close behind the first. If it is not, the mechanism is stopped immediately since an unloaded inductor coil would tend to burn out. All three mercury switches operate solenoid type air valves which perform the control functions.

Then the bars, rotating because of the offset roller action (fig. 4) pass through the inductor coils. These are fabricated of copper tubing, coated with fiber glass sleeving and glyptal and encased in transite. The coils

FIG. 3 — Cable leads to the coils come from the Tocco unit, under the floor and up into the capacitors shown here. Thence, via bus bars, the power is fed into the inductor coils. The wheel in the left foreground adjusts the coil boxes to the size of the stock being processed.



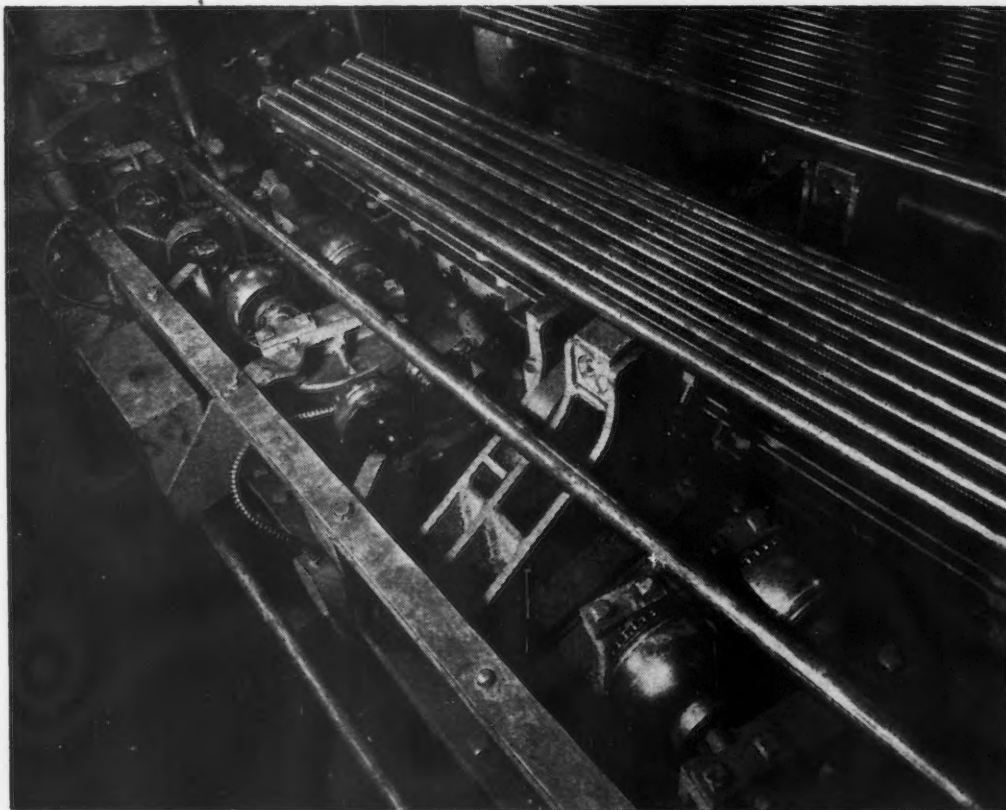
RIGHT

FIG. 4—The elevating arm which receives bars from the loading rack is shown in this view. Also visible are three sets of rollers and also the three mercury type switches which control the elevator arm.

o o o

BELOW

FIG. 5—Two Link-Belt variable speed drives, shown in this illustration, control the speed of rotation of the rollers and through this the speed of travel of the bars through the inductor coils.



(fig. 3) contain 17 turns, are water-cooled and vary in size to accommodate the size bar being processed. The coil boxes may be raised or lowered within a range of $1\frac{1}{2}$ in. to line up with different stock sizes. There are four coils, two in each line, each receiving a portion of the total 125 kw of power supplied by the Tocco unit and this portion is held constant by a voltage regulator. The bars are heated to approximately 1300°F in the first coils and then to approximately 1625°F in the second coils.

As soon as a section leaves the second heating coil, it passes through a quench ring. Quench is usually plain water at about 55°F and 70 psi pressure, although the pressure is adjustable to meet conditions. A quench chamber, visible in fig. 3, is adjacent to the quench ring to catch and drain the water resulting from the spray quench.

When the total length of a bar has passed through this process, it is removed from the rollers by another mercury switch and solenoid valve arrangement. Thus the rollers are always free to accept new bars as they pass through the coils.

Speed of travel of the bars must, of course, vary for different diameters. This is accomplished by two Link-Belt variable speed drives, shown in fig. 5, one for each line. Complete data on processing speeds is not yet obtainable since it varies not only with diameter but also with different steel analyses and required depths of hardness. However, during the writer's visit $1\frac{3}{16}$ in. diam plain carbon steel of an SAE 1045 grade was being processed at a rate of 320 ft per hr. a speed great enough to indicate the commercial practicability of the process.

Plastic Coating Expedites Stainless Stamping Operations

By W. A. PHAIR

Technical Editor,
The Iron Age

Use of a strippable plastic coating on stainless steel sheets, which gives promise of permitting substantial reductions in finishing costs in stamping, particularly deep drawing operations, by eliminating die marks and other marring of the surface, is described in this article. Reports from several stamping plants using this material, which has been introduced by Eastern Stainless Steel Corp., are included and some sidelights are given on the background of this unusual development.

SUBSTANTIAL savings in the cost of finishing deep drawn stainless steel parts are reported by a number of stamping plants through the use of a strippable plastic coating which remains on the sheet through the fabricating operations. This coating minimizes die marks, scratches and other marring encountered in normal handling routine and, in addition, appears to act, to some degree, as a form of die lubricant. This practice has proven unusually effective in the production of deep drawn stainless steel sink bowls of the type shown in fig. 1.

For many years stainless sheet producers have used gummed paper for the protection of sheet surfaces. While this method afforded the desirable protection, it also presented some undesirable complications. This was particularly true with the wider widths. Added to the application difficulties, were the problems of variations in the quality of the paper and the difficulties sometimes encountered in removing the paper coats which had adhered to the surface too strongly.

Realizing these complications, the technical staff of Eastern Stainless Steel Corp., Baltimore, endeavored to develop a better means of protecting the surface of stainless sheets during shipping and subsequent handling in the consumers' plants. It was the direct outcome of these efforts which resulted in a new type of coated stainless steel sheets. Early in 1945 Eastern began to investigate the possibilities of the use of Liquid Envelope* which had shown particular promise among a number of plastic materials tested. Since, in many stainless fabricating operations, scratches received in the course of fabricating require expensive refinishing of the surfaces, the possibilities of using a material which would remain on the steel throughout fabrication and which was also easily strippable was par-

ticularly attractive. In surveying these possibilities, H. S. Schaufus, chief metallurgist at Eastern, con-

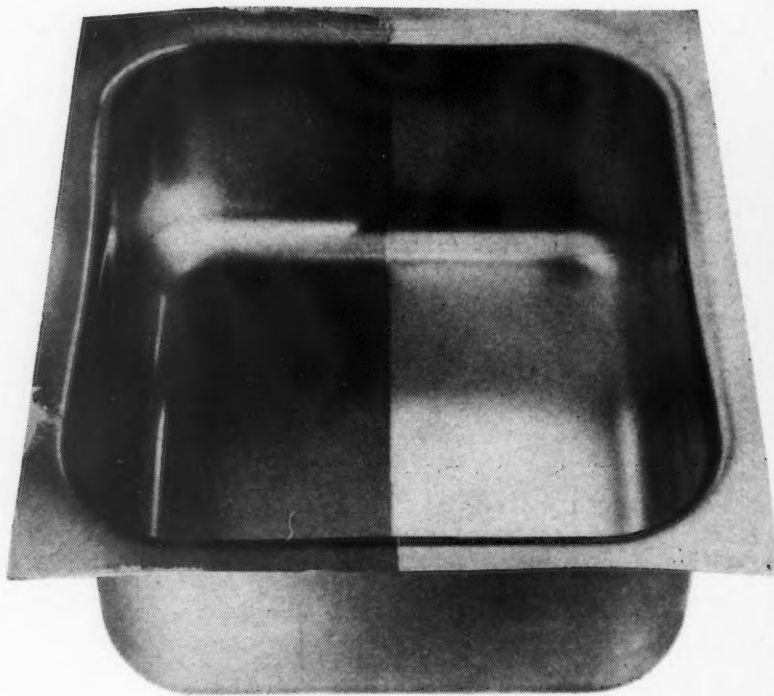
* Liquid Envelope is the registered trademark of a product of Better Finishes & Coatings, Inc., Newark, N. J. Its use as a corrosion protecting film for Naval equipment was described in THE IRON AGE, Apr. 18, 1946, p. 105.

ducted a number of Erichsen cup tests, such as shown in fig. 2, and noticed that the Liquid Envelope remained unbroken after the cup had been formed. Sensing the implication of this fact, other series of tests were carried out in which coated strips of stainless were subjected to various severe forms of deformation, including flat bending, tension tests, and also bending of channels in a small Di-Acro bench brake as shown in fig. 3. The coating in the latter tests was on one side only, and about 0.0015 in. thick. The coatings, after the bends were made, were still intact and provided the surface with continuous protection, as fig. 3 indicates. In forming these 180° bends in the laboratory, it was noted that a reduced effort was required to make the bends in coated stock, as compared with uncoated material. This immediately suggested the possibility of reducing power requirements in deep drawing of stainless, in addition to providing surface protection in severe drawing work.

In an effort to develop this idea, practical tests were arranged in several stamping plants wherein coated stainless steel sheets were drawn into sinks of the type shown in fig. 1. In one midwest plant, stainless sheets of 16 gage, with a No. 4 finish, and coated on the topside, were formed in one draw on a 1600-ton Toledo mechanical toggle action press, to sinks $8\frac{1}{16}$



FIG. 1—Two typical sink bowls which were deep drawn from stainless sheets coated with a plastic film. In each example the coating shown was on the sheet when the bowl was drawn. Note the unmarred surface where the coating has been removed. The two bowls are, respectively, 8 1/16 and 7 1/2 in. deep.



in. deep, 16 1/4 in. wide and 19 1/4 in. long. These sinks were eminently satisfactory in that they proved that the coated sheet could be subjected to a deep drawing without tearing, that the coating provided protection to the finished surface during drawing (and in subsequent handling) and that it remained easily strippable from the stamped sink.

As a corollary, the press operator reported that apparently the coating had some lubricating effect on the die although this was not explored too widely at that time.

It is understandable that stampers were somewhat chary in accepting and trying these coated sheets. This attitude is probably best described in the reaction of Harmon Hugo, manager of Portland Copper & Tank Works, Inc., South Portland, Me. Mr. Hugo, one of the pioneers in the use of stainless sheets coated with Liquid Envelope, reported to THE IRON AGE that "we will admit having a certain degree of skepticism when we were first approached on the use of Liquid Envelope in our deep drawing department. We thought at that time that it promised a little too much. A good many months have passed however since we first tried Liquid Envelope—and to say our skepticism has been overcome is to put it mildly. It has done a real job in our plant.

"Our particular problem was the deep drawing of a stainless steel sink bowl, using a 350-ton press. We picked this job for Liquid Envelope's 'baptism of fire,' and the results were gratifying. We found its application a very simple process. In the drawing it eliminated scratching 100 pct—there was no need for hand finishing or polishing. This feature in itself was a decided boon. But as time went on other advantages showed up that really proved its worth. Galling of dies became a thing of the past—no more time lost in hand stoning. We used less drawing compound and we also noted that the envelope did not peel or break in the drawing. The envelope came from the press as

though it were an integral part of the bowl. When ready for the stock and shipping room we found its removal as easy as peeling a banana. But the most important point to us was the fact that in the drawing process we did not lose the original natural beauty of the polished stainless steel sheet."

Another stamping plant that has run off sinks from coated stainless is the Uchtorff Co., Inc., Davenport, Iowa. F. P. Peisuich, chief engineer at Uchtorff, reports their experience with Liquid Envelope to be as follows: "While the polishing of the sink bowl is at present no problem, the uncoated bowl always developed a certain amount of scratches wherever there was a movement of metal in drawing, especially in the corners, where it is hardest to remove them. We note that on the coated sheets we do not get scratches any place. The cost of the Liquid Envelope and the cost of applying it, is considerably less than the cost of grinding out the scratches.

"The sink bowl is produced in a 400-ton Lake Erie hydraulic press with pneumatic-hydraulic cushions of 175-ton capacity. The material is 18 gage, type 302

stainless, with a No. 4 finish. The press has an approach speed of 110 in. per min and a pressing speed of 13 in. per min. For the production of the sink bowls, it takes full available tonnage on top and bottom as otherwise the stock wrinkles and tears. The sink bowl, when completed, is 7½ in. deep, 14 in. wide and 15½ in. long, and is drawn without annealing. While the material work hardens to a certain extent, not a single bowl has cracked due to stresses.

"On the first pass the flat blank is drawn to a 7½ in. depth. The draw punch has a flat bottom and the sides are sloped 1/16-in. on the side. In other words the flanged top is drawn to size, while the bottom of the bowl is ⅛ in. undersize on length and width. On the second pass the bowl is drawn to size and depth and the bottom is bulged for drainage. This operation is merely a set down which straightens the flanges and stretches the sides of the bowls so that they are straight. Due to the large amount of metal which is upset in drawing the corners some of it spreads into the flat sides and bulges these. These bulges are taken

out by stretching in the set down. The drain hole and drain hole flange are put in on a separate operation.

"The draw die is a conventional type draw die, designed on the same lines as used for other draw work run in our shop. The castings are Meehanite, not heat treated, with a high polish on the working faces. The draw ring has been replaced by a casting of 40 pct semisteel. The die has given good service on several thousand pieces, with little wear and upkeep. The die clearance on the side is a few thousands under normal sheet thickness, so that a light sheet has metal to metal contact and a heavy sheet irons somewhat. In the corners the clearance is increased to help the flow of the large amount of metal.

"In developing the sink bowl, the die naturally required a certain amount of rework to make it perform properly. However, it was mostly a matter of using a suitable drawing compound and our experimentation was largely confined to this."

Mr. Peisuich has indicated that the company is planning to run some other parts of coated stainless in type 302, 18 gage, 2B finish and also in type 302, 16 gage, No. 4 finish. The company plans to leave the envelope on after the parts are fabricated to serve as protection when installing and to remove the coating only when the job is complete and ready to be turned over to the customer.

Another firm that has found the use of coated stainless sheets profitable is B. H. Hubbert & Son, Inc., of Baltimore, manufacturers of seamless drawn steam jacketed kettles. R. B. Laws, manager of industrial sales, told THE IRON AGE that while their experience with Liquid Envelope coated sheets has been somewhat limited, they find that it has been very much worth while as it permits them to start fabricating with polished sheets when manufacturing certain items. They also find this material useful as an antispatter medium during certain welding operations. It has been estimated by the Hubbert Co. plant superintendent that several dollars per unit have been saved when using Liquid Envelope, as compared to the former method of assembly before they started using this material.

"We find it a very tough and resilient material which prevents scratching of polished surfaces," Mr. Laws explained. "This, alone, saves us considerable money in extra finishing costs on highly polished surfaces. It is our intention to go into the matter of protecting

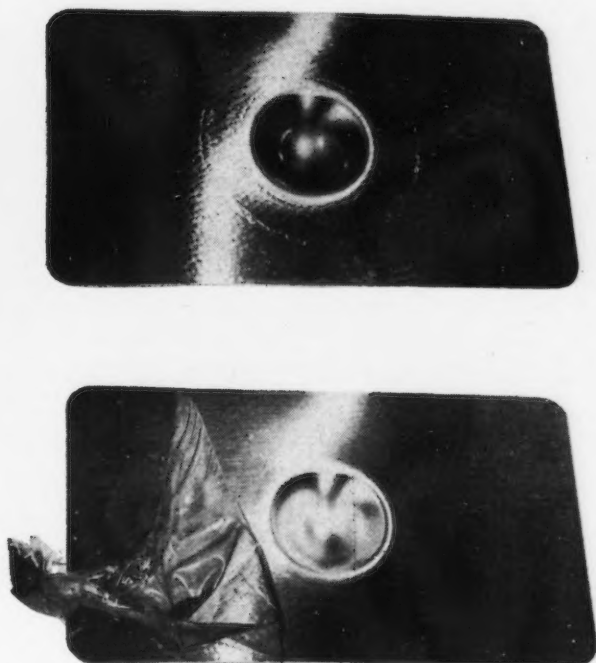
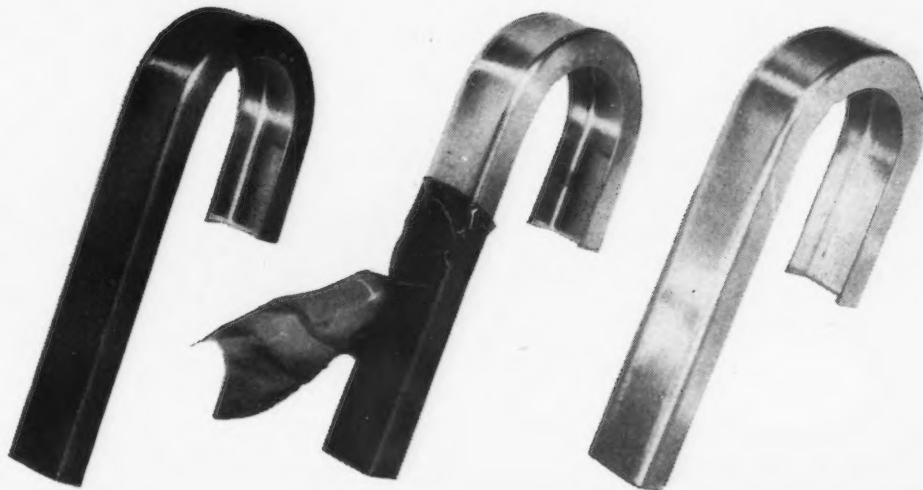


FIG. 2 — Erichsen cup test specimens showing how the plastic film protects the surface of the stainless material. Top view shows coat after cupping; bottom shows surface and cup after peeling the coating.

FIG. 3 — Protective qualities of the plastic film are illustrated in these views of a coated test specimen which was formed into a channel, then bent 180° with the film still on the piece. These three views are all of the same specimen; to the left is the piece immediately after forming, the center view shows the specimen partially stripped, while to the right is the piece completely stripped.



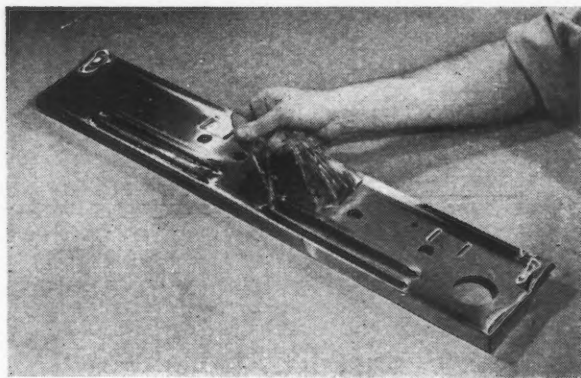
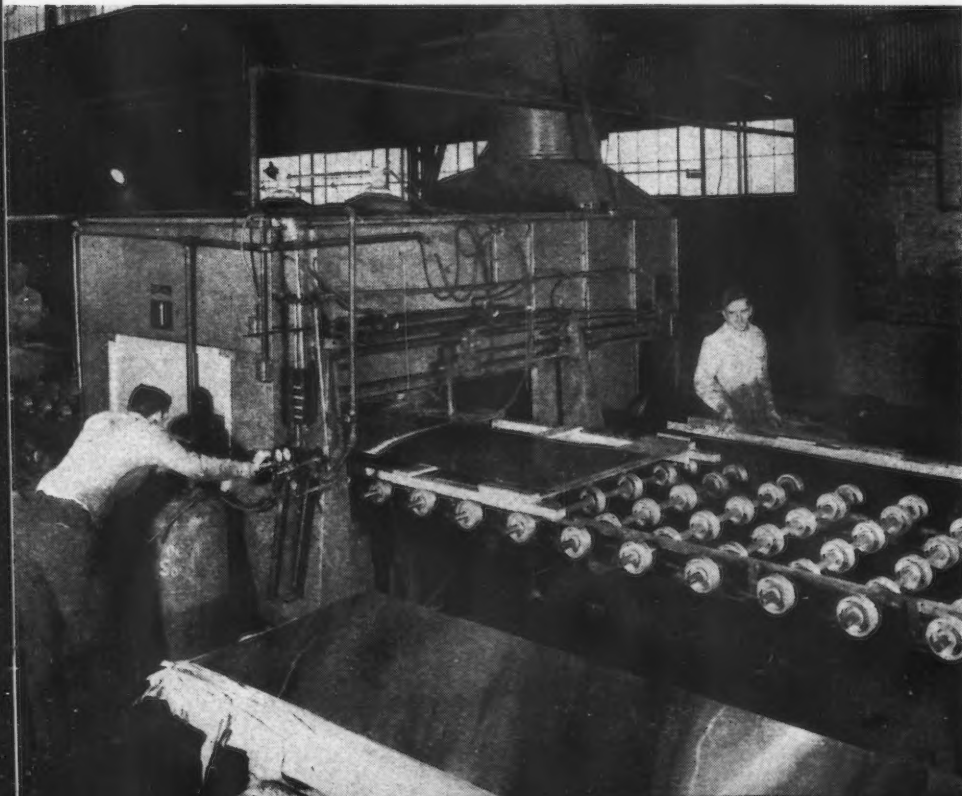


FIG. 4—Coating being stripped from a stainless steel cooking stove part after having been fabricated with the coating on.

polished surfaces more thoroughly, as we can predict an ever increasing use for this material in our many and varied operations throughout the plant. All of our kettles are polished with an almost perfect mirror finish, and we have seriously considered spraying Liquid Envelope over the entire kettle just before crating. This would insure our customers receiving the kettle as it left our polishing department. We believe that we can spray this material on a completed kettle about as cheaply as we can wrap it in heavy paper, when you consider the labor involved, in addition to the cost of high grade heavy wrapping paper," Mr. Laws said.

The advantages of Liquid Envelope are not limited to deep drawn stainless parts. The cooking range part, shown in fig. 4, is an example of a moderate forming operation. This part is a manifold cover of a heavy duty commercial cooling range manufactured by the Standard Gas Equipment Corp., Baltimore. This particular application of Liquid Envelope is made primarily as a matter of protecting the high surface polish which these products carry. As explained by

FIG. 5—Charging end of the automatic setup at Eastern Stainless Steel Corp. for applying Liquid Envelope to stainless sheets. The spray head is located at the entrance to the tunnel.



Robert E. Laffin of Standard Gas Equipment, this line of stainless gas cooking equipment is the first of its type to be mass produced and a considerable amount of scratching and marring of the No. 4 finish was being experienced during fabrication. This, however, has been largely eliminated by use of the plastic film which remains on the stainless steel through press, punch, brake and assembly operation. It is stripped off only when the unit is fully assembled and ready for packaging and crating for shipment.

Mr. Laffin points out that while the plastic coating may also provide a cushion for the die, the company is largely interested in protecting the expensive No. 4 finish to eliminate the wastage of sheets which formerly were scratched up beyond reclamation, and to also eliminate the repolishing of sheets and parts which were scratched slightly but which were reclaimable.

Although the significant characteristics of this coating material have not yet been fully evaluated, it has already established itself as an excellent medium for the protection of sheets in handling, shipping, storage and especially during fabricating operations, mild as well as severe ones. It is also apparent that this coating material eases the flow of metal, since it possesses the quality of a soft cushion and as such, improves the efficiency of various lubricating compounds. It is most likely that this feature makes it possible to accomplish deep drawing operations, like sink bowl forming, without any intermediate annealing and cleaning. The savings in time and expense and the elimination of production problems resulting from this improvement can be readily appreciated by all who are engaged in severe forming operations. Finally, the protection afforded by Liquid Envelope coats produces finishes after fabrication which are highly attractive and which are very difficult, if not impossible, to produce by other hand finishing methods.

The exact function of this coating, aside from its value as a surface protection, is not quite clear. That it does reduce the power requirements in deep drawing operations, probably by acting as something of a die lubricant, appears certain although a series of

tests have been run in which coated parts were drawn with and without a lubricant wherein the use of a lubricant was shown to be advantageous from the finish viewpoint. This is also substantiated by the experience of the Uchtorff Co. previously reported.

In an effort to determine more accurately the exact behavior of the Liquid Envelope in drawing and other cold forming operations, Eastern Stainless Steel Corp. is undertaking an extensive research program. This project should, when completed, answer many of the presently unanswered questions.

Sidelights on the Liquid Envelope include the fact that it may be sprayed, dipped, painted, roller coated, extruded or brushed. When welding is necessary, the coating is stripped from the weld area, the welding

performed, and the coating reapplied by spraying or brushing. By experiment, Eastern has determined that the most effective coating, taking into consideration the demands of deep drawing operations, is from 0.0015 to 0.0025 in.

The enthusiastic reception accorded the coated sheet by Eastern's customers has resulted in a demand that has outstripped Eastern's coating facilities. To meet these demands, the company, which specializes in

stainless, has installed an automatic setup for coating the sheets, as shown in fig. 5. This installation provides for a continuous flow of sheets through an automatic degreaser, thence through an automatic spray booth and an infrared drying unit. After coating on a continuous conveyor, the sheets are readied for shipment. These special facilities produce coats of high quality and uniformity and also make it possible to perform the operation economically.

Degreasing and Rust-Inhibiting With Infrared

COMBINING degreasing and rust-inhibiting into one simultaneous operation through employment of an infrared burn-off oven designed for treating sheet metal products prior to painting in the plant of a large manufacturer, has made possible the elimination of an alkali wash, two rinse tanks, a Bonderite tank and an acid bath, and has resulted in a superior rust-inhibiting surface, according to Burdett Mfg. Co., Chicago. Average time for the entire operation is said to be 5 min. The equipment manufactured in the plant is a lubricating apparatus for automobile service stations and garages. Requirements call for finishes of superior quality to withstand the effects of water, gasoline, oils and grease.

Primarily, the process involves placing gas-fired,

infrared burners in proper relation to the work, as determined by scientific standards. It is said that because of the simplicity of the method and equipment, there is no possibility of bugs in the operation and maintenance is greatly reduced. The process burns off grease and similar film and simultaneously produces a blue surface described as a tight scale which protects hidden surfaces not ordinarily reached by rust-resistant liquids.

Sheets treated by this method revealed no rust when tested for 5 weeks under severe weather conditions and in an acid atmosphere. Paint adhesion is said to be equal or superior to surfaces treated with commercial liquid rust preventives. The oven was manufactured by Burdett Mfg. Co.

... NEW BOOKS ...

"A Treatise on Milling and Milling Machines." The second section of this treatise, recently published, deals with the fundamental concepts of milling. It describes factors such as cutting speed, feed per tooth, amount of work material removed, chip formation, surface finish and the use and effect of cutting fluids, power required in milling and the mounting of cutters. Cincinnati Milling Machine Co., Cincinnati. 326 p., \$1.00.

* * *

"Milling with Carbides." A comprehensive treatise prepared by the milling cutter division of the Metal Cutting Tool Institute, giving in concise, authentic form virtually all available information on the use and application of carbide milling cutters. Covers carbide grades, machines tools and fixtures, cutter design, operating techniques, and care and sharpening of cutters. Metal Cutting Tool Institute, 6400 Chrysler Bldg., New York 17. 41 p., \$1.00.

* * *

"Resistance Welding Manual." Revised edition includes 20 new chapters and tables of recommended procedures brought up to date with respect to present day practice. Mechanical and electrical characteristics of conventional ac and stored energy systems are treated in detail, together with discussions of electrical controls and power supply. New section con-

tains chapters on quality control, standard tests and instrumentation. Other revisions outline test specimen requirements and discuss common fields of application for the different methods of testing. Resistance Welder Manufacturers' Assn., 505 Arch St., Philadelphia 6. 552 p., \$3.00.

* * *

"Cycles," by Edward R. Dewey and F. Dakin. This book discusses the science of prediction as a means of gaining an insight on the economic outlook for the critical years ahead. Rhythm and cycles and their relation to building activity and industrial production are discussed. Henry Hold & Co., 257 Fourth Ave., New York 10. 255 p. \$3.00.

* * *

"The American Individual Enterprise System," by the Economic Principles Commission of NAM. Written in response to today's clamor for a realistic and factual explanation of the American individual enterprise system, the book describes in detail how the system functions; its nature, evolution and future. Principles and practices which promote the achievement of its goal are discussed. The publication represents the collective thoughts of a group of outstanding executives and economists. The findings of several research studies made on the subject have been included. McGraw-Hill Book Co., 330 W. 42nd St., New York 18. 1119 p, vol boxed. \$10.00.

Lightweight Gasoline Engines



TYPICAL parts for lightweight gasoline engines produced of aluminum diecastings.

MODERN scientific planning to achieve a definite manufacturing aim—the economical mass production of lightweight gasoline engines—is exemplified in the new plant of McCulloch Motors Corp., Los Angeles. Miniature replicas of the plant and of every machine tool and other facility were laid out and studied before final plans were drawn, building begun, and orders for materials and equipment placed.

A careful analysis was made of the various methods of production, and since it had been decided to locate the plant on the west coast, the company was particularly conscious of utilizing the best production methods so that it could compete in price with eastern manufacturers in spite of the location handicap.

The standard method of building these small engines out of sand castings and using cast iron as the basic material was first analyzed. This is the method by which 90 pct of small gasoline engines are produced today. It was found that this manufacturing process has become exceedingly expensive and there was very little possibility of it decreasing in cost in the future. Foundry labor rates are higher than they have ever been in the past; machine tools have become extremely expensive; floor space is a much larger item than previously; and in all, it was believed that this process was not adaptable to the product or to the location of the plant.

Iron sand castings have risen to approximately 13¢ per lb and are not of the high quality that was standard before the war. All engine parts made from sand castings require numerous machining operations, which in turn involve large expenditures for special purpose tools. It is also not economically feasible for a concern to do its own sand castings, and good sand casting facilities were hard to find in the Los Angeles area. For the company to have its own sand casting foundry, it would be necessary to acquire much more floor space than was originally anticipated for the production program.

It was also found that it was difficult for factories producing engines by the sand casting method to change from one model to another without having completely separate facilities for each type. Finally, the conclusion was reached that engines made of iron castings, although reliable in most cases, were unduly heavy for the horsepower produced.

The possibility of utilizing the comparatively new method of high pressure diecasting was then investigated. Although this method had been successfully used by outboard engine manufacturers, it had never been used to any great extent in the industrial engine field. It was found that the initial investment of dies

Made From Diecastings

By R. P. McCULLOCH

President,

McCulloch Motors Corp., Los Angeles

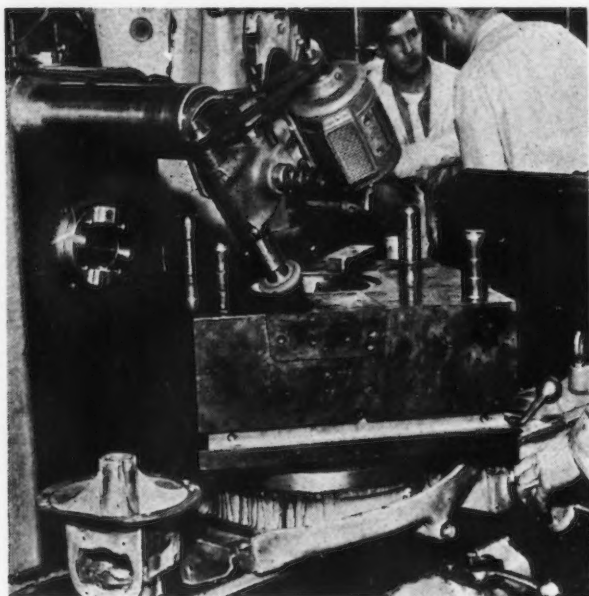
Factors influencing the choice of diecastings in the design of a new type of lightweight engine, including such considerations as a substantial reduction in machining operations, lower scrap losses, and the possibility of employing light, inexpensive machine tools, and greater flexibility for design changes are discussed in this article. An outline of the major manufacturing and assembly operations in the production of the McCulloch motor at a rate of 10,000 per month is given.

and diecasting machines is very large for this manufacturing method. Because of the greatly reduced manpower required to produce castings, and because of the large quantity of parts that could be made from each die before any appreciable wear of the die became apparent, the actual cost of each aluminum diecasting became competitive with similar iron castings when spread over a very large production despite the high initial expense. This low cost of each aluminum diecast part was obtained not only because of the comparatively small amount of manpower required in the actual process, but also because aluminum weighs only

one third as much as iron. Therefore, the material cost of a part in aluminum is equal to that of the same part in cast iron when the cost per pound of aluminum is three times that of cast iron.

Although the aluminum diecastings are slightly more expensive than sand castings, a large saving is realized by the diecasting method after the part has left the casting department and is prepared for installation in the assembly line. Tolerances in the castings can be held to 0.005 in., allowing all mating surfaces, holes, bearing retainers, etc., to be cast in finished form so that no further processing is required. The only work remaining on a diecasting is to remove the excessive flash, grind down the sharp edges and to tap all holes where threads are required. It is evident, therefore, that very few special purpose machine tools are necessary to finish diecastings, which results in a tremendous saving of processing costs. It was also found that scrap losses for aluminum diecastings amount to only 0.7 pct compared to 3.0 pct for sand castings. Additional important savings are realized since any porosity in a diecast part is evident as soon as the part leaves the die.

Another very important advantage gained by utilizing high pressure aluminum diecastings wherever pos-



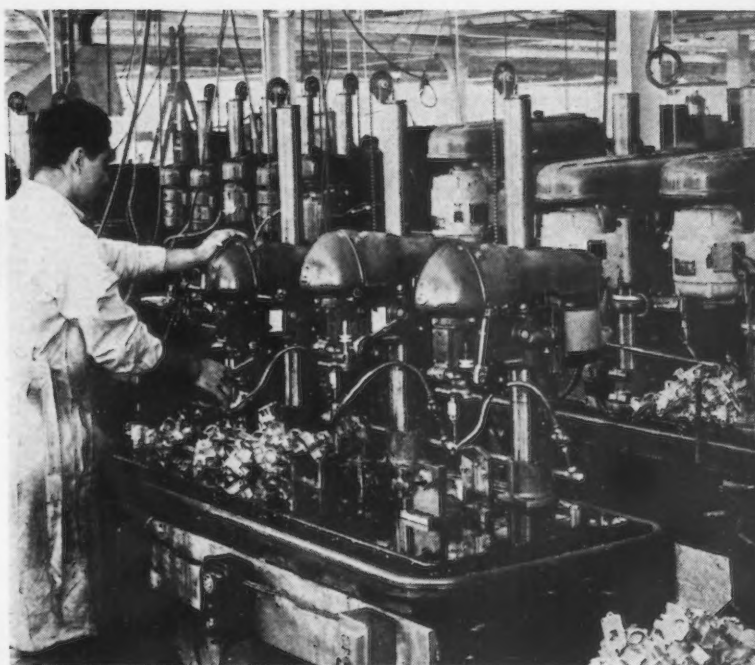
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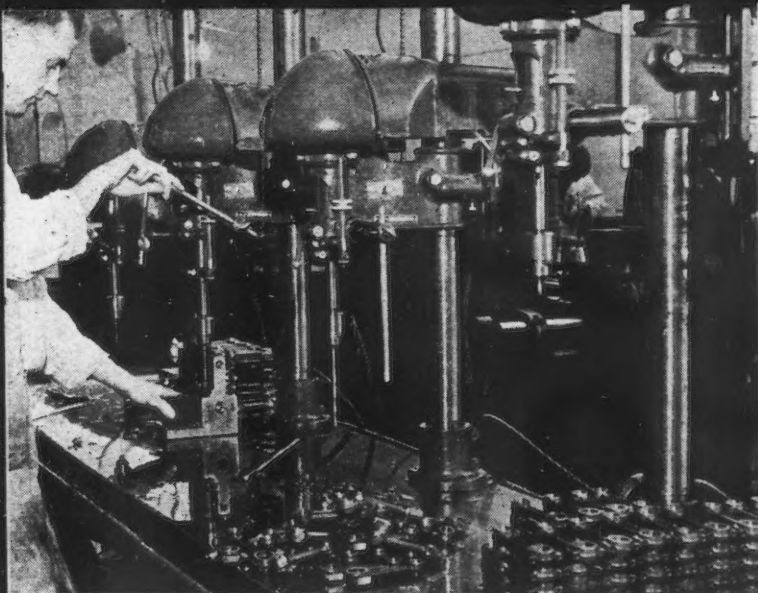
FIG. 1—Adapting a high speed grinder to a milling machine and employing a rotary table aid materially in die finishing.

o o o

RIGHT

FIG. 2—Bolt holes and other circular orifices in carburetors are drilled and reamed on this battery of 15 Delta drill presses.





sible, is the flexibility of the manufacturing facilities. Using a standard crankshaft at the basic part, a number of different types of engines can be built around it. If a customer requires an engine to be built integrally into his product, or if he requires one that can be run in a vertical position, it is possible to design an engine especially suited for his application, machine the necessary dies for the special parts, install these dies in the diecasting machines, and place the engine in mass production utilizing only the equipment already available. The McCulloch series 1200, a two cycle industrial engine now in production exemplifies this production flexibility. These engines use the same crankshaft, cylinder, piston, and connecting rod, but each model is designed for a special application for which it is better suited than any general purpose engine. The model 1200D, for example, operates with the crankshaft in the vertical position and is suitable for rotary cutting type lawn mowers and vertical shaft pumps. The model 1200B was designed to drive the Reed-Prentice Timberhog saw and has a reduction gear box built into the crankcase.

It was therefore decided to set up the west coast factory to build engines by the diecasting method on the basis that it was certain that better engines could be built cheaper and in competition with manufacturers located in the eastern states. Many thousand engines have now been manufactured and a recent review of production costs has substantiated this decision.

When the engineering department initiates a new engine design, each part is carefully studied to determine whether it can be made of diecastings. The parts that are adaptable are designed in such a manner that a satisfactory die can be made for each of them. The die designing department draws up the necessary die and it is then turned over to the tool shop for sinking.

As shown in fig. 1, considerable ingenuity is often displayed in this department. In this case a Milwaukee milling machine has been temporarily adapted with a grinder head in combination with a rotary table. The die shown is for use in a 3G Reed-Prentice machine for diecasting engine crankcases which weigh 8 lb, 3 3/4 oz.

After the die has been finished, it is transferred to the diecasting department which is located adjacent to the tool shop, for installation in one of the

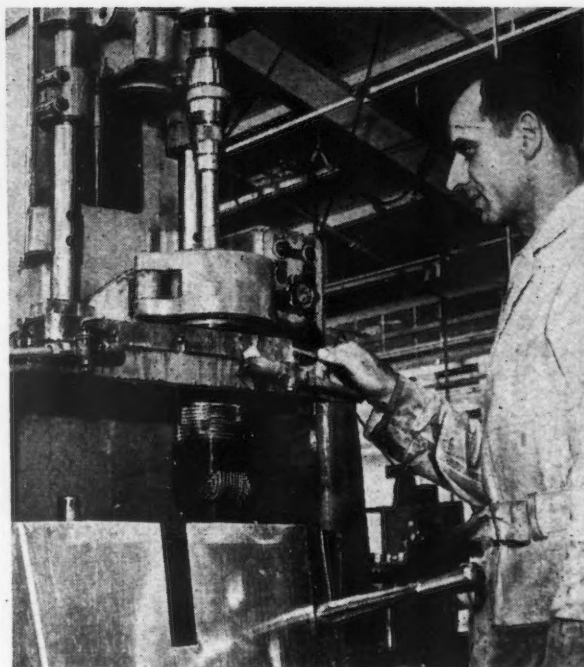
LEFT

FIG. 3—Delta drills are similarly used for boring the bearing holes in connecting rods for installation of the needle bearings at each end.

o o o

BELOW

FIG. 4—A two-station Barnesdril honing machine used for finishing the bore of the cylinder liner.



diecasting machines. In this way the production of an engine can be controlled from the initial design all the way through to the finished production. This system has proved so satisfactory that carburetors, magnetos, coils, and many other parts that normally are obtained from a subcontractor are made right in the plant.

The diecasting equipment in the plant at the present time includes one model 3-G Reed-Prentice diecasting machine, three model 1 1/2-G Reed-Prentice machines and two Cleveland model 400. This equipment will be increased by several more diecasting machines that are now on order. The breakdown furnace equipment used for melting aluminum consists of two 20kw 400 lb and two 20kw 750 lb Ajax induction melting furnaces and four Fisher gas furnaces, one of 600 lb and three of 500 lb capacity. With this present equipment it is possible to produce all the diecast parts in the product at a production rate of up to 10,000 engines per month.

After the castings leave the diecasting department they are moved to the casting cleaning department. Here all flash is removed, castings are deburred and cleaned to remove sharp edges and prepared for final machining.

From the cleaning department the castings are then transferred by overhead conveyors to the various processing departments and then to the final assembly line on the same conveyor, where the material for the day's production is removed, the excess being carried to finished stores to be reissued as needed.

In the milling of the ports for two-cycle engines, the tolerances, both axially and radially are maintained within 0.003 in. with respect to each other. This is accomplished by a small milled slot previously machined on the base of the cylinder sleeve, and all subsequent operations, both machining and diecasting, locate from this notch. In the design of the diecasting die, an attempt was made to properly fit the core forming the intake passages and the large core from the cylinder area so as to prevent the intake passages, through the slot, from filling with aluminum due to the high pressures used. This was successfully done by maintaining extremely close tolerances throughout the milling and diecasting process.

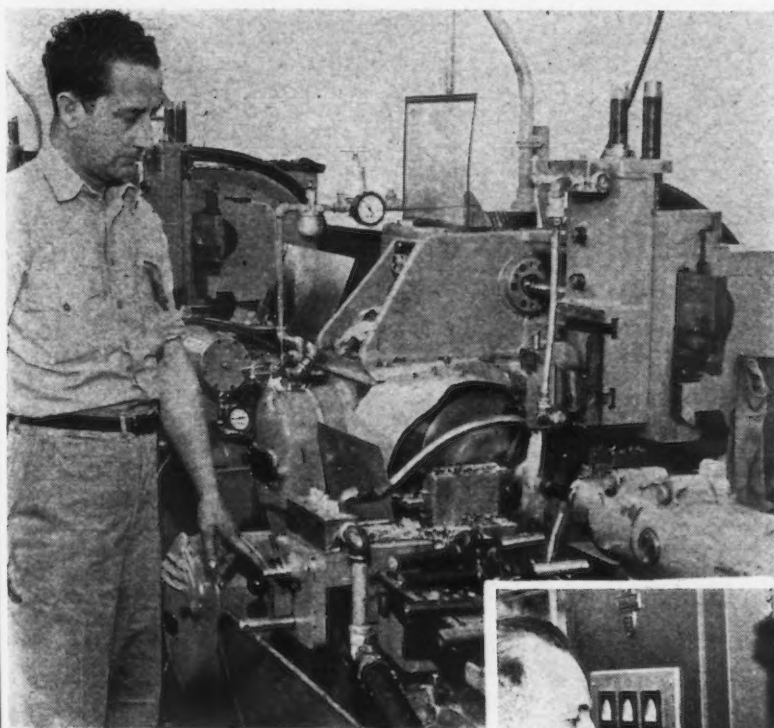
Typical of the light, accurate, but inexpensive equipment that can be successfully employed for machining these diecast parts is the row of Delta drill presses shown in fig. 2 used for drilling and reaming all the bolt holes and circular orifices in carburetor parts. The same type of equipment is also used as shown in fig. 3 for drilling and boring connecting rods.

The cylinder is unique in having practically no draft in the fin area and maintaining a 7/32-in. fin space with 1/32-in. thickness of fin. This is believed to be the only cylinder or casting of this type being produced today. The cast iron liner is fully machined

on the outside for intimate contact with the diecasting material and for proper heat transmission. After the cylinder has been cleaned and deburred, it is mounted on a Sundstrand automatic machine which completely turns the outside contour, finishes the mounting surface, and machines the cylinder liner to proper length. This is immediately followed by a multiple boring operation where three cylinders are completely finished in two indexing operations on a W. F. & John Barnes automatic cylinder boring machine. Finish honing, fig. 4, is performed on a Barnesdril two station automatic machine. The only other operation requiring handling is the tapping of the 14 mm spark plug hole.

The crankshaft machining line is set up to perform all operations necessary to transform a rough forging into a finished, hardened crankshaft. To eliminate the need for skilled labor, all tooling on the crankshaft line is of the automatic type and operators can be trained within a few minutes. The first operation is to mill the end of the crankshaft to length, remove web material from center of crankshaft and counter-balance cheeks. This is done on a Sundstrand planer type mill utilizing two Gaines bolting fixtures capable of holding four crankshafts in each. One fixture is, therefore, loaded while the other is cutting, using conventional and climb cutting respectively. From

there the crankshaft passes to an automatic Sundstrand centering machine where centering holes are drilled into the ends. The depth of these holes is located relative to the crank cheek and subsequent operations locate in these center holes. Cranks are next straightened on a Hydro-press hydraulic machine. The shaft is then transferred to the first Sundstrand automatic lathe, fig. 5, where the flywheel end is rough turned for a portion of the shaft length. The second operation is on the next Sundstrand where the outside diameter of the crank cheeks are rough and finish turned and the sides rough faced. One end is also chamfered and tapered at this point. Next operation is to remove the heavy burrs from the edges of the crank throw. The shaft is then put on a third Sundstrand where the straight



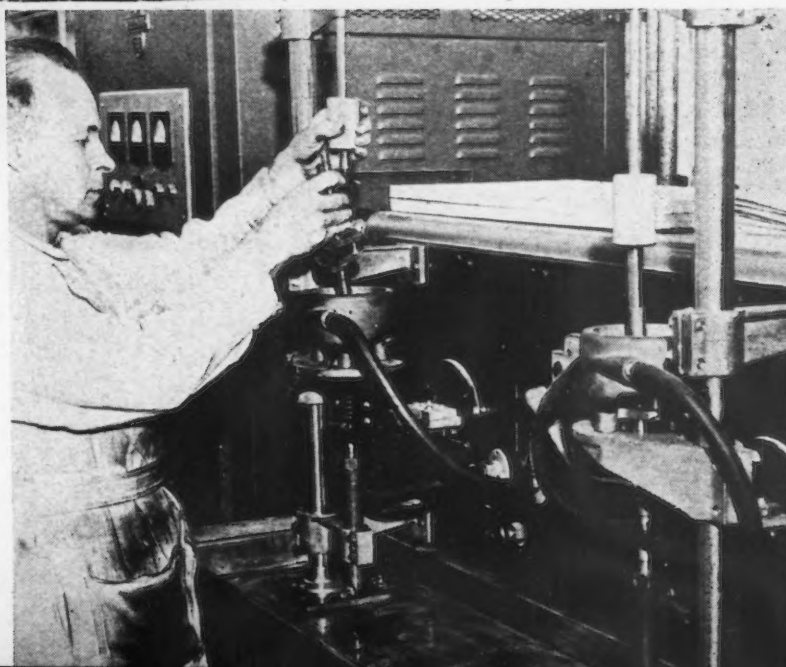
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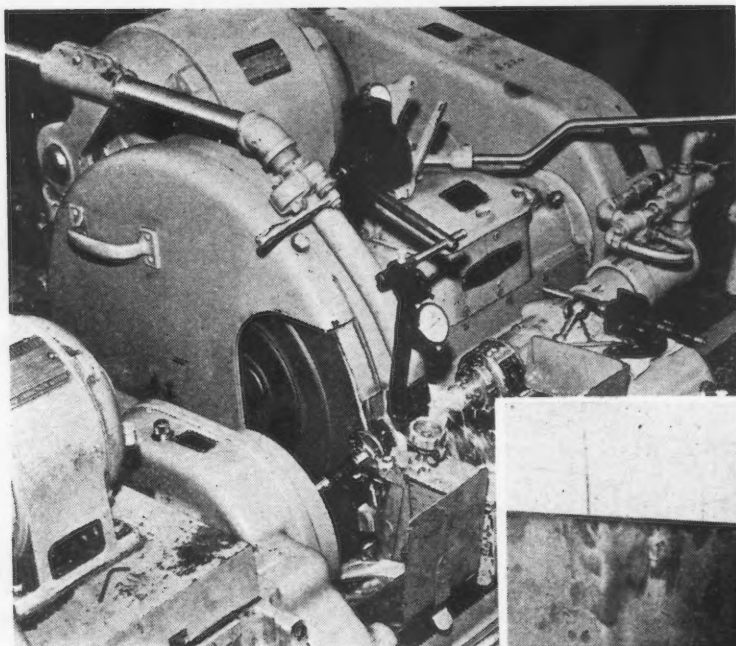
FIG. 5—First turning operations on the crankshafts are performed on Sundstrand automatic lathes.

o o o

RIGHT

FIG. 6—Rapid, controlled case hardening of the crankshafts is performed by the use of Thermonic induction heaters set up in the production.





LEFT

FIG. 7—Norton grinder setup for rough grinding the needle-bearing end of the crankshaft. The same machine also finish grinds to a tolerance of 0.0003 in.

o o o

BELOW

FIG. 8—Engine test bench showing rail-mounted electric motor used for starting purposes. After preliminary rpm check, engines are connected to a load and given correct governor and carburetor settings.



end is rough turned and the outside of the second crank cheek is finish chamfered. These same operations are performed on the tapered end of the crankshaft by the next three Sundstrand automatic lathes. The crankshaft is then passed to the Fay automatic where the crankshaft throw is finish turned. Again the crankshaft is completely burred and cleaned to remove all foreign matter before hardening.

First hardening operation is done on the throw where both the diameter and the sides of the throw are hardened to depth of 0.045 to 0.055 in. Next operation is to harden the taper end and transfer to a second station for hardening operation on the long straight end. These three operations are performed on a Thermonic induction hardening machine of the ultra high frequency (3800 cycles) type, fig. 6. Crankshafts are then checked for straightness, counterweight holes drilled, small holes drilled in the end of the crankshaft in some models for attaching drive units and accessories, and finally the centers are lapped preparatory to grinding.

The crankshafts next enter a battery of ten Norton automatic grinders, fig. 7, for the finishing operations. Rough grinding operations are performed on the main bearing diameter before finish grinding of the crankshaft and the crankshaft throw. Crank is completely finish ground for its full length and the final operation is to finish grind the tapered end. The shaft is next passed to the Landis threading machine where the flywheel thread end is finished to class 3 tolerance. Last and final operation is the milling of the Woodruff keys for the flywheel and the magneto rotor. These are located from the crank throw. The crankshaft is then passed through the cleaning process and inspected on a multiple diameter inspection gage where all diameters are checked automatically.

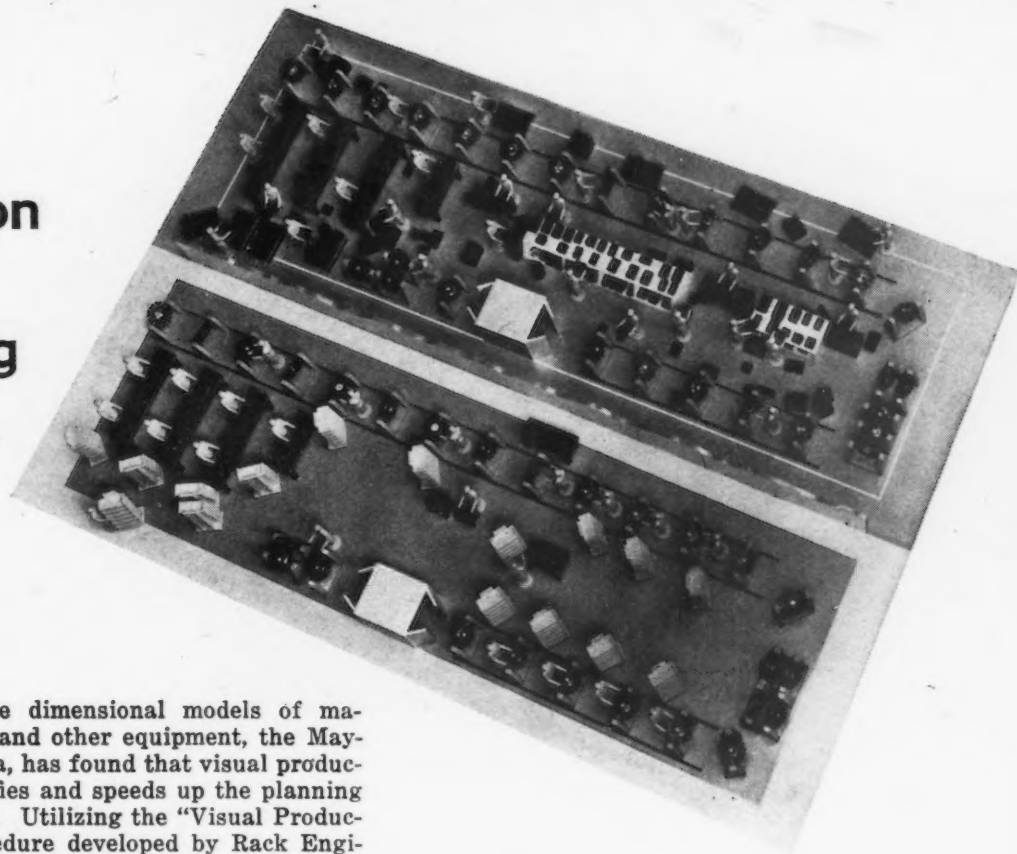
All finished parts are carried by overhead conveyors to the final assembly line. At this point the crankcase

is mounted on a movable jig and all parts are added as the jig moves down the assembly table. The painting operation is novel in that the completed engines are carried by an overhead conveyor through an enclosure lined with infrared lamps before entering the spray booths. The residual heat causes rapid drying of the paint, and by the time the engines reach the end of the line they are cool enough, and the paint is dry enough for easy handling.

From painting, the engines pass into the test room which has sufficient test benches to accommodate 28 engines at a time. Engines are placed on fixtures on the bench, as shown in fig. 8, and are started by an electric motor which can be rolled on a rail by the operator to any point over the engine. Loading of the engines is accomplished by the use of variable-pitch propellers that can be set automatically, from no load to full load, by push buttons. Each engine is given a thorough test with varying loads, the carburetor and governor being adjusted at the final test.

Accepted engines are conveyed to another spray booth where any necessary touch-up paint can be applied, and where final inspection takes place. Engines remain on the conveyor during inspection, and then travel directly to the shipping department for crating and shipment.

Visual Production Planning



EMPLOYING three dimensional models of machines, benches and other equipment, the Maytag Co., Newton, Iowa, has found that visual production planning simplifies and speeds up the planning of new plant layouts. Utilizing the "Visual Production Planning" procedure developed by Rack Engineering Co., Pittsburgh, the Maytag Co. recently applied this method to a department devoted to the assembly of radial aircraft engines. The top section of the accompanying photograph shows the department as it originally existed, with considerable congestion and wasted floor space and high indirect labor costs arising from the manual sorting and handling of parts required in this setup. The lower section of the photograph shows the floor layout recommended and installed by Rack.

Extensive use is made in the new layout of conveyors capable of handling 1-ton loads carried in easily accessible trays hung on one of their uprights. These conveyors, fitted with roller bearing wheels in a swivel arrangement for easy placing, give 30 sq ft of working surface while occupying only 10 sq ft of floor space. The unobstructed center aisle in the

new layout contributes to improving safety conditions in the department.

The Rack Visual Production Planning procedure is said to eliminate drafting of elaborate floor plans. The models used in this new plan are true reproductions of the individual machines. Scale models of personnel are also used. After study of the department requirements, the models are laid out on cross-sectional paper set to a suitable scale and then photographed. The resulting photograph, such as that shown in the accompanying illustration, is turned over to plant engineers for setting up the new layout.

New Fluxless Aluminum Solder Tested

TESTS made of the bonding qualities of Alsoco, a new fluxless aluminum solder, are said to have indicated that aluminum joined with this material resisted shearing after a 250 hr salt spray corrosion test, even though the base metal itself broke. Decrease in strength after the test, which was made on three grades, was 3, 8.60 and 4.60 pct respectively.

Described as an important material for the aluminum wire field, an aluminum wire soldered to a copper lug indicated a resistance of about 20 mi-

crohms and showed a resistance increase of only 8 microhms after the salt spray test. Vibration tests on 1/4 and 3/8-in. stranded aluminum cable soldered to copper lugs resulted in failure of the cable but not the solder.

No preferential attack on the base metal by the solder was indicated during the salt tests, and although the solder showed surface corrosion, it did not appear to be caused by galvanic action. The solder, which has a flow point well below aluminum and its commercial alloys, is marketed by the Alsoco Corp., 10 E. 52nd St., New York.

Vibration Testing

By HARRISON JOHNSTON

*Special Products Div.,
General Electric Co.,
Schenectady*



FIG. 1—Electronic vibration testing meter being used to measure vibration of a milling machine.

THE amount a product vibrates when it leaves the factory is often a good inverse measure of product acceptance. Excessive vibration is annoying to product users because of the sound accompanying it and because of the difficulty in supporting or maintaining position of vibrating machines. But more important to users and to manufacturers, the amount of vibration often determines product life and a manufacturer's reputation.

The acceptance of this fact is shown by the increasing use of vibration measuring instruments by the metalworking industry. One of the largest tool manufacturers in the country is regularly measuring the vibration, as shown in fig. 1, of its product to determine if there is any unbalance in the moving parts of the machine. A blower manufacturer is using another type instrument to make certain that the shaft and bearings of his product are in balance. Another tool company is using vibration testing instruments as standard equipment in developing new machines.

Excessive vibration results in accelerated wear and fatigue failure of vital parts, thus shortening the expected life of the equipment considerably. Vibration in a product can be minimized by: (1) Designing equipment for minimum vibration; (2) reducing vibration by proper balancing, and (3) periodic vibration measurement as a factor of preventive maintenance.

Vibration prevention starts in the design stage, where prototypes may be thoroughly tested and each part examined for balance and assurance that resonant frequency is outside operating ranges. But a final check is necessary on the assembly line to measure performance of the product before shipment. Simple tests for vibration amplitude give an

accurate, direct measure of product quality in a short time. These same tests permit a close watch on equipment as a maintenance routine, so that potential trouble can be spotted and corrected before it becomes serious.

Preventive maintenance involving routine vibration checks is an important function of any maintenance group. Actual measurement of the vibration is the only reliable check a maintenance crew has on condition of rotating equipment. There have been cases where the normal operating crew became so accustomed to vibration of machinery that a gradual change in the amount of the vibration was not noticed. The story of a crew member on an American ship is typical. He reported that the vibration apparently increased very gradually in one of the pieces of auxiliary rotating equipment. Because of close contact with the equipment, and because the change was so gradual, the crew noticed no change. No vibration checks were made periodically so that the condition became worse and worse, going unnoticed until one day the vibration became so excessive that the machine flew apart, causing great damage to the interior of the ship and putting it out of operations for some time. A simple vibration test made periodically could have prevented such extensive damage and allowed the repair crew to make an inexpensive repair instead of a major overhaul.

Vibration testing often helps to improve the quality of other products. For example, a manufacturer was having trouble getting a smooth grind from a grinding machine. Many different balancing techniques were tried without success. The use of an electronic vibration meter allowed the manufacturer to discover which part of the grinder was causing

g and Product Acceptability . . .

the vibration, and thereby isolate the vibration and correct it.

One of the most simple and serviceable vibration instruments is a combination of a dial indicator, a spring, and a mass. The dial-type vibration indicator is a purely mechanical instrument which is sturdy and easy to use. It uses purely mechanical amplification of the motion of the vibrating object to produce an oscillation of the needle. Vibration displacement is read on the dial as the total travel of the indicator needle. Mechanical vibration instruments are limited by the mass of their moving parts, which must be accelerated and decelerated with each cycle. The mechanical vibration instrument has recently appeared in the recording form as well as the indicating form. A recording form vibrometer which gives a permanent record of vibration amplitude has also been developed.

The optical-mechanical vibration instrument, shown in fig. 2, reduces the mass of moving parts by deriving some of its amplification from the optical system. A small mirror is connected mechanically to the stylus which contacts the vibrating object. The light from a small lamp is reflected by the mirror onto a ground glass screen. As the mirror oscillates with the vibrating object, the light spot lengthens out into a line. The length of the line on the screen, which is graduated directly in thousandths of an inch, gives the displacement directly. Because of the smaller mass of parts, the range of the light-beam indicator is wider and the accuracy is better than the dial-type instrument. The range of this and other types of indicators are shown in fig. 3.

A more versatile vibration instrument is the electronic vibration meter, shown in fig. 1, which uses a detector that generates a voltage and an electronic amplifier. The vibration is then indicated on an electric instrument. This equipment offers a flexibility in range and usefulness which makes it well adapted to either production testing, trouble shooting, or development work. With the electronic vibration meter, measurements of vibration velocity and acceleration may be made as well as vibration displacement. Since the detector unit feeds an electrical signal to the amplifier through wire connections, the measuring instrument may be located remotely from the equipment being tested and in a location that is more suitable for personnel safety or comfort.

In the case of complex equipment, it may be desirable to test for vibration within a certain frequency range those which may be characteristic of unbalance in certain parts of the equipment. Suitable filters with the electronic vibration meter make this selective testing easy. Every turbosupercharger

The amount of vibration existing in a product is often a vital factor in determining the effective life of the product. This article explains some of the possible consequences of excessive vibration, and describes the various types of testing equipment available, its ranges and typical applications.

manufactured in the United States during the war was tested for rotor unbalance by this method. This meant production testing of over 300,000 superchargers.

For large machinery, such as turbine generator sets, it is desirable to keep a record of conditions of vibration during the start-up and warm-up period

FIG. 2—A vibration displacement indicator being used to check vibration of an electric motor.



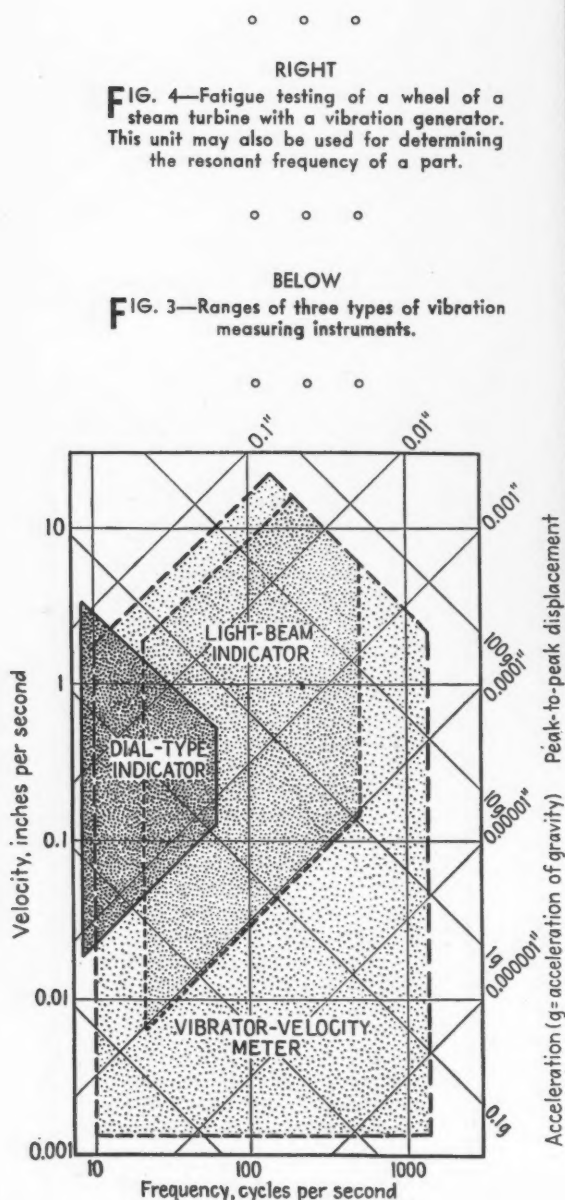
so that the chief engineer will have a permanent record of the operation of the equipment during these critical periods and so that he can examine the rate at which the operator went through critical speeds.

For example, records taken on a large turbine by a supervisory recorder showed that although the eccentricity, shell expansion, and load were very nearly constant, the vibration was increasing. This gradual increase continued for several days. When the machine was shut down for inspection, it was found that a crack was developing in the generator field shaft.

Without the warning given by the supervisory instruments, this crack could have progressed until complete failure resulted, since the vibration increase was so slight that it was unnoticed except

for the indication of the instrument. The permanent record also showed that the increase was steady. Such data could not have been obtained by any of the other vibration checking procedures commonly used. Engineers working on the job were convinced that considerable expense was saved by the prevention of serious damage to the generator and accompanying equipment.

Electronic instruments are valuable, too, in measuring directly one of the unpleasant results of vibration-sound. For this measurement, the detector becomes a microphone and the instrument is usually calibrated in decibels above an arbitrary sound level. The sound level meter provides a means of measuring sound level as it would be heard by the human ear, as well as sound pressure in which all frequencies are measured equally. Such sound



measurements are especially important for equipment to be used in the home. Production tests are set up for such items as refrigerator motors, where the quantities are quite large. Each motor is tested individually in a soundproof room. Those exceeding a certain sound level are diverted to other uses. A close check is kept on the sound trend, to locate any unusual conditions which might make all the motors too noisy.

An aircraft company is using this type instrument to test the soundproofing of its cabins. A machine tool builder is using one to check the sound level of his product, and a builder of engines is using it to test his product before it is shipped. Blowers are notorious noisemakers in many factories, so a manufacturer of blowers is using an instrument of this type to measure this phase of the acceptability of his product.

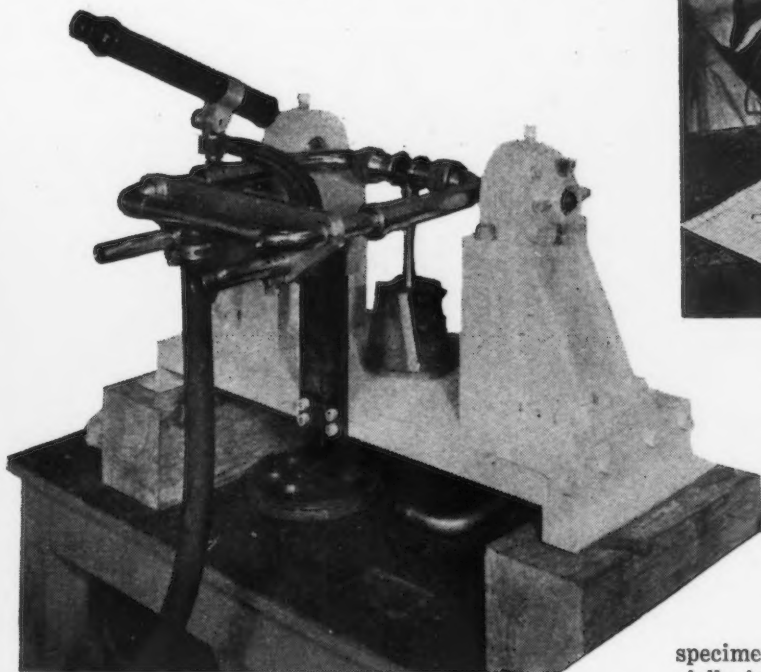
RIGHT

FIG. 6—Use of a portable balancer of the type shown here permits on-the-spot checking of equipment.

o o o

BELOW

FIG. 5—Pneumatic fatigue tester which employs compressed air to vibrate the test specimen. Use of a small furnace permits testing a part at actual operating temperatures.



Even with great care in the design, normal manufacturing tolerance usually permits a certain amount of vibration. It may be uneconomical to try to correct these unbalances, but the engineer must be certain that the materials he uses will withstand them. He must also be certain that the parts are designed so that the resonant frequencies are outside the range of the normal operating frequencies of the equipment, so that none of the parts will be unduly fatigued in normal operation.

To help the engineer and the metallurgist test the materials and designs to be used for a part, fatigue testers are often used. The electrodynamic motor shown in fig. 4 is used for fatigue testing and also for determining the resonant frequency of parts. When supplied with variable frequency from an electronic oscillator, it vibrates the part or the specimen at any selected frequency from 20 to 10,000 cycles per second.

This equipment is especially useful for testing complete subassemblies to determine fatigue strength, critical frequencies, and operating characteristics under vibrating conditions, or for testing equipment to meet conditions of high acceleration which may be encountered under actual operating conditions.

For making accelerated fatigue tests, a recent development has been the pneumatic fatigue tester shown in fig. 5. This equipment uses compressed



air to vibrate a test specimen or a small part of a complete assembly at its resonant frequency in order to accelerate the fatigue test. Parts are vibrated at a frequency between 150 and 300 cycles per second so that potential failure points can be determined, and results obtainable with various designs and alloys can be evaluated quickly. With this type of equipment, tests can be made at actual operating temperatures through the use of a small furnace which surrounds the

specimen. Fatigue tests of this type have been especially important in the design of gas turbines, where the operating temperatures and stresses are both high, and where materials and designs must both be carefully tested.

By testing prototypes for vibration characteristics and by thoroughly investigating the nature of the parts and the materials to be used, a product can be designed to eliminate a considerable amount of vibration. In actual practice, of course, there will be some variation because of normal manufacturing tolerances. This factor led to the development of static and dynamic balancing equipment. With the use of electronic amplifiers and more sensitive detectors, balancing methods will continue to improve.

In addition to factory installed balancers, there is also equipment available for on-the-spot balancing of large rotating parts which, through service, have become unbalanced or which are too large to ship as a completely assembled unit after being balanced in the factory. Such a portable balancer is shown in fig. 6.

By applying the methods of careful measurement and analysis, and by carefully testing designs and components, as well as routine checking of products off the production line, the manufacturer can safeguard the performance of rotating equipment. The user can likewise prolong the life of the equipment by frequent preventive maintenance checks of the vibration and prompt corrective action in rebalancing where vibration is excessive.

How to Use Carbide

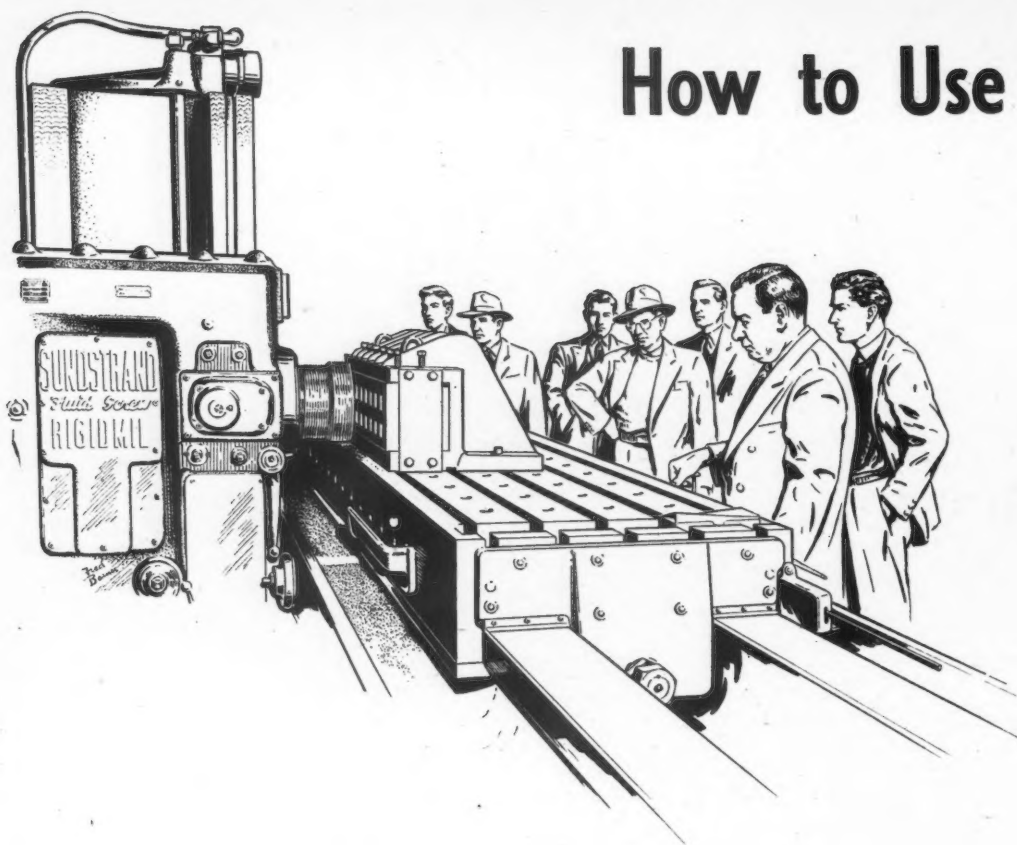


FIG. 69—Essential to an effective personnel training program is observation of actual milling operations with carbide cutters.

INTELLIGENT management always considers a seller's market as temporary and transitional from an abnormal period, such as follows a world war, to the normal status of competition. The reasons urging far-reaching changes in manufacturing procedures are based on more substantial considerations.

The first of these is the necessity for appreciable reductions in cost in the face of increasing cost of materials, inevitable rise in wages and mounting overhead charges.

Neither the first nor the last can be controlled except incidentally.

And while the manhour charge is bound to increase, if only to hold total earnings at such a level as to keep government income from taxes sufficiently high to prevent defaulting on the government debt, it is nevertheless this cost factor, and this one alone, that can be controlled.

Indeed, the very fact of its increase in the form of wages provides the necessary incentive to effecting its relative decrease by increasing labor's productivity. It is not the cost of a manhour but its productivity that concerns management. Wages are not actually raised but out of the increased results of a manhour, labor's return can be increased.

A carbide conversion program can increase the productivity of machining manhours in a manufacturing plant. The ratio of the machine tool to the total varies according to the nature of the industry and in heavy machinery and engineering manufacturing it is as high as 75 pct. The remainder of direct manhours is consumed in such activities as welding, pipe work, bench and assembly, testing and erecting. Carbide tooling, both single point and milling, affects only machine manhours.

While it is true, as sometimes stated, that "carbide helped win the war," it is also true that in this post-war era less than 10 pct of all machine manhours in industrial America are producing with benefit of carbide. Numerous surveys indicate that their productiveness can be increased from 10 to 50 pct, and in numerous instances as much as 75 pct. Thus in an organization employing 500 workers with a monthly manhour total of 80,000, one half of which are effective on machine tools, carbide tooling can step up the output from 10 pct to at least 50 pct, or an increase of from 4000 to 20,000 man-hr per month available for additional production. This in a 500-man organization amounts to a saving of from \$20,000 to \$100,000 per month on the basis of the present volume of business.

Only a small portion of these savings will be needed to defray the expenses of a conversion program. The ratio will depend upon the rate at which new equipment, suited for carbide use, is substituted for obsolete machine tools and whether management has properly set aside funds for such replacement.

Savings averaging 25 pct in machine manhours can be effected without more than the usual capital expenditures for replacements. This is the all-impelling reason for the inauguration of a carbide conversion program.

Steps in the Program

The steps in the program are: Organization, education, application and follow through. And this is their logical order if the conversion program is to be lastingly successful.

First, organization or management activity and

Cutters for Milling

By H. A. FROMMELT

Consulting Engineer,
Chicago

... Converting to Carbide Milling ... Educating Management

Converting the machining operations in a plant from conventional tooling to carbide cannot be conducted in a haphazard manner if successful results are to be obtained. As described herein, a complete educational program should be laid out, starting with top management and continuing through the ranks to the actual operators, and should include both classroom theory and practical demonstration on work regularly handled in production.

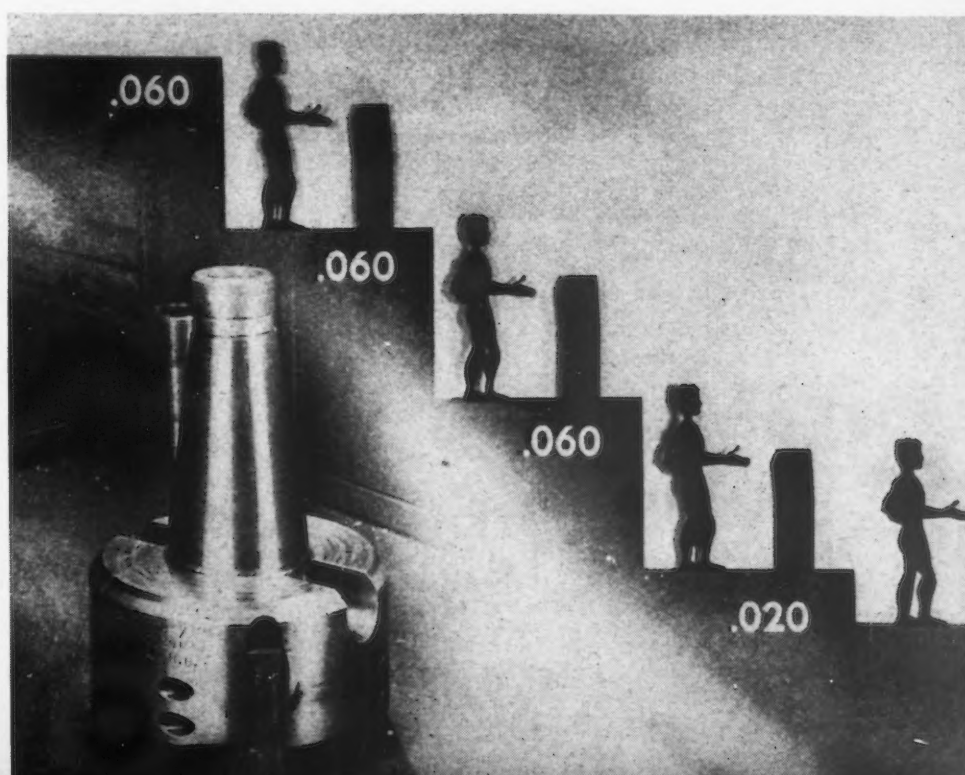
directives consciously applied to the plan. No plan will be better than the character of its conception on the management level. Its necessity and, above all, its advantages must be so thoroughly appreciated as not only to remove all doubt and hesitation but to inspire all concerned with a determination to overcome all difficulties and obstacles.

The next step is quite obvious. The policy will now be established and all personnel on the management level will not only be informed but instructed to prepare themselves accordingly. Since a state of mind cannot be ordered, an educational program for this specific purpose will be inaugurated. But before this step is taken, it becomes necessary to delegate this

and all other activities to a competent individual who is not only on the management level, but who can express management's mind and formulate and implement a plan in accord with that mind.

Regardless of the size of the organization, delegation of authority to direct the activities is important. Without such delegation the activities are haphazard, sporadic and ineffectual. In the smaller plant this appointment may be necessarily given to a present member of the organization. In the larger facilities, these responsibilities will be borne perhaps by a department, sufficiently staffed, and reporting directly to a vice-president in charge of manufacturing. The details of organizational procedure and plan may well

FIG. 68—Typical scene from a slide film such as is available for instruction on the technique of using carbide cutters.



be left to the top management. More important at this point is the emphasis on management's conscious realization of both the necessity and advantages of this activity of carbide conversion.

The second step, as indicated previously, is the launching of a far-reaching and thoroughly adequate educational program. This activity properly begins on top management levels to the end that the full import of conversion is clearly conceived by management's standard bearers. This is interpreted to mean that foremen will be given an opportunity to appreciate the economics of conversion before they are asked to digest the details of the new technique. The economics of conversion should be permitted to reach the workers, a group that should not and cannot be ignored, and it is doubly important to indoctrinate foremen.

This is the starting point of the program, and if properly carried out will generate the necessary enthusiasm on all levels in the organization.

It may be necessary to call upon specialists in the field, as consultants, to make available the necessary information and assist in its proper and therefore effective presentation. Much of the progress of subsequent activities and their success depends on the careful planning and execution of the educational phase.

On the lower, although equally important, levels is the transmission of the know-how to the producing personnel. This new technique, the fundamentals of which are recognized and agreed upon by management, will not, as yet, have had any practical applications in the shop, and must, therefore, be explained in simple terms and made attractive to those who will be called upon to put it into practice. This will include supervisors, inspectors, time study and wage incentive personnel.

Films Can Be Used

Information is available in neat and ordered form, particularly as motion and sound slide films as shown in fig. 68. Numerous articles have been written in the technical press during recent years. Some, if not much of this, must, however, be carefully screened for obsolete information. The developments in carbide machining have come so rapidly that data only a few years old may be already obsolete.

All occasional and sporadic injections must be rejected in favor of a definite plan and schedule. The advantages of imparting such information or carrying on such an educational and training program on the company's time is now so thoroughly evident from experience that there is little choice left in settling this important detail.

Such classes should be announced as part of the management's policy and the person upon whom this authority is placed should direct and control training activities. The actual conduct of classes in the larger organizations will be staff duties but management's representative must be close enough to be seen clearly and frequently. At this stage of conversion it is most important that the official stamp be set forth so that all may read and understand. The actual classroom material will be confined to the fundamentals, or to what the educational world refers as related material.

Application of carbide to everyday and actual shop jobs is the desired objective—at least when such applications comprehend all possible metal removal activi-

ties in the plant. At the very outset, however, and in the early beginnings of conversion, the first applications are primarily made with the training objective in mind. In fact such jobs converted to carbide are made parallel with the training activities and are to be used for the training of all groups. One half the time should be spent in a classroom assimilating the fundamentals of the technique, while the remainder of the allotted period is devoted to observing and, it may be in some instances even, doing, as shown in fig. 69.

Such preliminary conversions, while primarily educational and designed to impart the essential know-how, will not be translated into production language and records until some time has elapsed. Restudying time values should not be undertaken until the producing personnel, including group leaders of operators, have gotten the feel and full import of the technique. When this has been accomplished and the operational techniques have settled into a groove, then re-evaluation can be undertaken. This is based not only on good time study practice, but on good pedagogy and human relations.

The simplest operations—in milling, plain face milling, and in single point tools, a simple lathe job—should be selected for the purposes of training as well as inauguration of a new technique of metal removal. Furthermore, the operations should not only be simple, but should be performed on standard equipment at rates suitable for such tools. Even then metal removal rates will be increased considerably over the older art, and this will call for careful handling. At this point the economics of metal removal should be stressed as a vital and important factor in reduction of unit costs, the company necessity for entertaining such thoughts, and possible worker participation in effected savings.

The human approach needs a tickler at this point. Increasing rate of metal removal equals increased handling of parts or materials. Installation of simple but more efficient handling devices and methods, at the outset, and as part of this preliminary training phase, will assist in overcoming mental hazards and prejudices. Likewise attention should be paid to the safety problem involved in this technique because of hot chips, flying metal and greatly increased surface foot rates that appear, if they are not actually so, to be dangerous. Steps in that direction at the beginning of the program will impress the worker with management's sincerity about so-called human values.

As the application activities increase and spread to ever widening circles, restudy of time values begins with those jobs originally converted. The effect upon bonus and wage incentive plans, and especially, upon the sum total of the take-home pay is a management problem and calls for policy making on the higher levels.

As stated at the beginning of the discussion on application, the simplest jobs should be undertaken first. The reason at that point was obvious: Sound pedagogy, good teaching, effective training and efficient transmission of the know-how. There is another good reason; for beginning with the beginning and with beginners' jobs. The technique is radically new; all new methods demand a change in long-formed and founded habits, than which there is nothing more painful to the human spirit. Starting with the

simplest calls for the least break with the past and its traditions.

This approach ends once and for all the temptation to tackle the tough one first. Numerous and otherwise well-intentioned conversions have fallen by succumbing to this evil.

The application phase involves also the consideration of and actual purchase of new equipment designed or at least suited for this technique. The revolution in metal removal has completely overturned this procedure also.

While formerly machine tools were bought only for physical capacity, that is, table dimension and travel, for example, to accommodate the components of largest dimension likely to be encountered in the foreseeable future, that now has become a matter of minor concern. The problem has now resolved itself into one consideration: Assuming that the machine can be designed and purchased suitable for full and complete realization of the advantages of carbide, then the only limit to the rate at which metal can be removed is in the workpiece itself. Other considerations demand attention also, such as the limitations imposed by the material handling problem to mention but one of several. By and large, however, the rate at which metal can now be removed depends solely upon the component, its physical characteristics, its cross-sectional areas, the difficulty of holding or fixturing and its inherent physical and metallurgical characteristics.

The radically different approach to the problem of metal removal today begins with the study of the job and its allowable rate of metal removal. From this follows the change in the request for proposals from the machine tool builder who need now know only the rate at which a specific metal is to be removed and the physical dimensions of the component. Unless the profound character of the revolution in metal removal that is upon us is fully appreciated, disastrous errors will be committed.

Follow Through

No problem in manufacturing is ever solved once; if it is successfully solved it must be permanent. And there is a yawning gulf between once and permanent. Entire procedures in inspection and checking must be revamped, beginning with the proper education of this personnel and since carbide machining can result in far better surface conditions, the effects of a conversion program should be reflected in changed specifications coming out of the engineering department. And these will be properly inspected after they have been produced, not visually, but with the best available instruments and devices.

Grinding techniques must be set up that are correct for and suited to this art of carbide machining, and these results must be checked regularly to insure continuity. Proper relationship must be established between the grinding department and the production line or personnel to the end that dulled blades are returned and that a prompt and sufficient supply of reconditioned blades is made available to the production departments and machines.

A time for removal of blades must be set, and someone delegated with the proper authority to see that the limits are observed before uneconomical length

Previous articles in this series covering carbide milling were as follows:

| Part No. | Subject | Issue Date |
|----------|--|---------------|
| 1. | Fundamentals of carbide milling. | Feb. 13, 1947 |
| 2. | Low carbon steel and wrought iron. | Feb. 20, 1947 |
| 3. | Straight carbon and cast steel. | Feb. 27, 1947 |
| 4. | Heat-treated steels. | Mar. 6, 1947 |
| 5. | Armor plate, heat-treated alloy steel, stress proof steel, die plates. | Mar. 13, 1947 |
| 6. | Stainless steels. | Mar. 20, 1947 |
| 7. | Semisteel, Ni-Resist, alloy cast iron. | Mar. 27, 1947 |
| 8. | Factors governing cutter life, selecting feed rates. | Apr. 10, 1947 |
| 9. | Regulating life between grinds, cutter design. | Apr. 17, 1947 |
| 10. | Factors involved in good practice. | Apr. 24, 1947 |
| 11. | Tool grinding, reconditioning and blade setting. | May 8, 1947 |

of use is permitted. This removal should be based either on the results of a visual inspection of the surface condition of the workpieces, or upon the increase of power consumed by the machine. These and related procedures are an intimate part of a proper follow through.

Finally, and most important, follow through is concerned with keeping the training and educational activities on a continuously high level of achievement and desirability. Keeping it up-to-date is one important consideration of the follow through, and keeping it functioning for all employees, both old and new, suited to their proper levels, is another.

Training in the know-how will be closely related to the results of a carbide conversion program out on the production line, not only in the actual results in terms of increased production but in its functioning, it will continue to use a suitable portion of the production line for demonstration class purposes unless training equipment is available as an additional advantage.

A carbide conversion program will be successful only insofar as its steps are properly executed. Management and policy-making activities, based on reasoned-through conclusions, precede action. Then comes the all important step in training, first of management itself, then of management's lieutenants, and down through the organization, not in dribbles but cataracts, to the least of the operators and operators' helpers. Application must come next, or even in step with training—in the beginning, as demonstrations for teaching, then as production procedures and techniques, and finally carried throughout the production departments. A permanent follow through will insure repetition, continuous and permanent, of the desired results.

Part 13 of this series on carbide milling will appear in the next issue.—Ed.

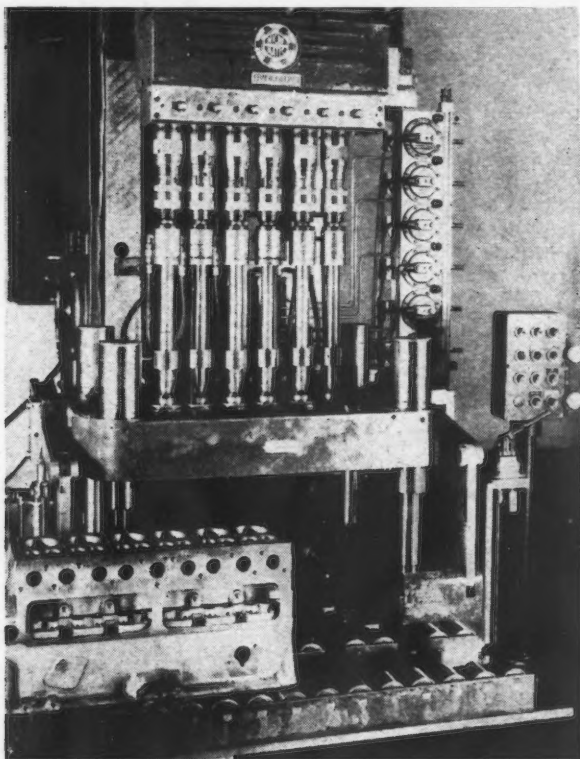


FIG. 1—All six bores in this automobile cylinder block are automatically honed to exact size and to a bore-to-bore variation not exceeding 0.0005 in.

TO eliminate or materially reduce selective fitting of pistons in automotive cylinder bores, Micromatic Hone Corp., Detroit, has developed a honing tool and head that automatically controls the finished bore size. Fig. 1 shows a Barnesdril honing machine equipped with a Micromatic Hydrosizer six spindle head, tools and fixtures in the plant of one of the major automobile producers.

In a honing cycle of 30 sec, this equipment removes an average of 0.004 in. stock from each of the six bores, corrects out-of-roundness and taper, and holds bore-to-bore size to not over a 0.0005-in. variation. The operator loads the block into the fixture and presses the button to start the honing cycle. The feed-out of the tool, the collapsing and withdrawal of the tool and the compensation for abrasive wear is entirely automatic.

It is standard practice, in production automobile plants, to manufacture and stock pistons in a range of sizes. As the blocks come to the assembly line, each cylinder is measured and a piston is selected to fit it. Since the fit of the piston must be kept within close tolerance, the greater the variation in bore sizes, the more piston sizes must be stocked.

Honing being the last operation on the cylinder bore, the Micromatic Hone Corp. has worked for several years to develop a means of keeping the cylinder bores to a uniform size. This work has resulted in a new order of thinking in relation to control of bore size and accuracy, within close tolerances. Two Micro-

Automatic Size Control Of Automotive Cylinder Bores

• • •

matic developments have made it possible to maintain this accuracy in production operations.

The first of these is controlled positive feed-out of the tool. The tool is expanded at a controlled rate by a hydraulic cylinder. This positive expansion may be adjusted so the high spots are honed before any stock is removed from the large parts of the bore. This results in the bore being straightened and made round with a minimum heat and distortion.

The second development is the Hydrosizer automatic size control. An air gage is built into the honing tool. The pressure in the gage drops in proportion to the stock removed from the bore. When the pressure drops to a predetermined point, because the bore has been honed out to the desired size, the honing cycle is completed automatically.

The sizing device operates as follows: Air is taken from the plant air line. The pressure is reduced to approximately 6 psi. This air supply is put through venturi fittings into two circuits, independent of each other except that any variation in the air supply will affect them both equally. The pressure in each one is controlled by the rate at which air is allowed to escape from it, and is not affected by the conditions in the other circuit. In one, the control circuit, the pressure is controlled by a micrometer adjusted metering valve. In the other, the gaging circuit, the pressure is controlled by two caliper bars which measure the bore diameter. The pressure in the two circuits acts on opposite sides of a diaphragm.

The orifices in the two circuits are adjusted so the pressure in the gaging circuit is greater than that in the control circuit, when the bore is smaller than the desired size. As the bore reaches size this pressure drops below that in the control circuit and the diaphragm is moved. The movement of the diaphragm operates an electrical switch which stops the expansion of the tool. When all six bores are to size the tools are collapsed and withdrawn.

For practical purposes the smallest size that can be honed by this technique is 2-in. diameter, although it is possible to go below this. Ports, undercuts, or heavy stock removal are said not to affect the accuracy of this type of automatic sizing.

New Equipment...

New developments in turret lathes, a vertical stroke grinder, creep testing machine, high vacuum heat treating furnace, a portable welding machine and various small tools and attachments are described herein. Also featured are a heavy duty textile conveyor belt, double action hydraulic hand pumps, and cope and drag plates.

Automatic Turret Lathe

KNOwn as the 3U Speed-Flex, an automatic turret lathe, introduced by the *Potter & Johnston Machine Co.*, Pawtucket, R. I., is arranged for spindle speeds of 73 to 1445 rpm or as optional equipment dual speed ranges of 36 to 711 rpm and 73 to 1445 rpm, a swing over the cross slide of 3 $\frac{3}{4}$ in. diam, chuck equipment 6 in. in diam, cross slide travel of 2 $\frac{1}{2}$ in. each way and a turret slide travel of 6 in. Four automatic changes of spindle speed with each set of hand pick off gears, and three automatic changes of feed are features of the machine, which has electro-pneumatic control of speed and feed changes and rapid traverse. Change from rapid traverse to feed, or vice versa, requires 1/5 sec. Rapid traverse movement of turret slide and cross slides for one complete cycle of the machine takes 24 sec, it is reported. Turret slide can drop from rapid traverse into feed for 1/4-in. travel and return to rapid

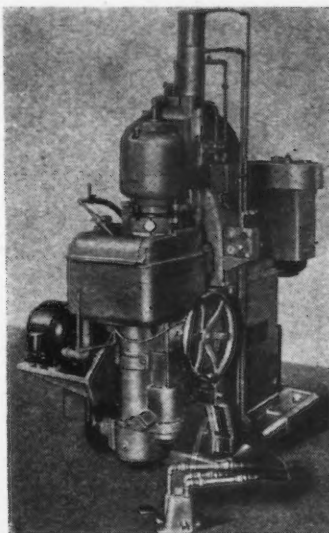


traverse in 2 sec under setup conditions of top speed and 0.010 in. feed per revolution. The lathe weighs 5000 lb and occupies only 16 sq ft of floor space.

Vertical Stroke Grinder

AVERTICAL stroke grinder which grinds surfaces flat, concave or convex up to an angle of 15°, the grinding wheel traveling vertically over the surface being ground, instead of horizontally, has

been developed by the *O. S. Walker Co., Inc.*, Rockdale St., Worcester. The work table may be tilted left to right 15° and front to back 7°. Hydraulic travel of the head to working position is rapid traverse; then at any given point above the work the rapid traverse comes to the positive grinding feed. This is accomplished by a foot treadle, a feature said to insure a uniform

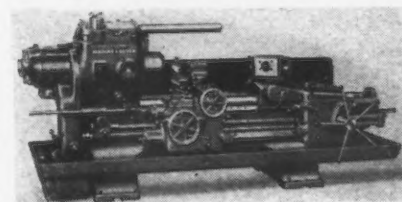


operation cycle that controls production and in many instances allows the operator to run two machines. Spindle, work table, and coolant pump have fingertip control. The machine may be furnished with a motorized spindle head of any hp capacity or with vertical motor belt drive. Work up to 4 in. high can be ground under a wheel up to 12 in. diam.

Saddle Type Turret Lathe

NO. 22 saddle type turret lathe, built for 3 $\frac{1}{2}$ and 4 $\frac{1}{2}$ in. bar capacities with 15 $\frac{1}{2}$ in. swing over cross slide and 23 $\frac{1}{2}$ in. swing over the guides of the bridge type carriage, has been announced by *Bardons & Oliver, Inc.*, Cleveland 13. For chucking work it can be equipped with a 15-in. heavy duty

scroll chuck. A flange mounted motor eliminates belts and pulleys. Head gears and shafts of heat treated alloy steel, with short spaces between bearings are said to lend great rigidity and strength



to the power transmission. Twelve speed changes, in geometrical progression, are preselective. The hydraulic selector valve on top of the head housing carries a dial indicating the spindle speed in rpm and cutting speed in fpm. A single lever on the head controls the start, stop, reverse, spindle brake and gear shifting. All functions including the operation of the multiple disk forward and reverse clutches are performed by hydraulic power.

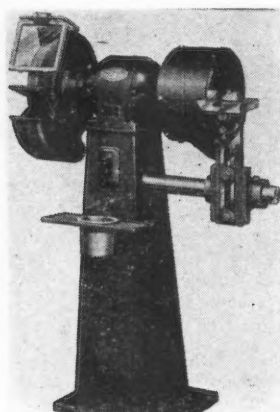
Flute Long Tipped Reamers

CARBIDE tipped reamers with tips running full length of the flutes have been standardized in 32 sizes ranging from 1/4 to 1 $\frac{1}{2}$ in. by the *Super Tool Co.*, 21650 Hoover Rd., Detroit 13. The long tips are said to serve as long wearing guides when operated through bushings and prevent the reamer from freezing up in bushings due to galling. The tool also maintains its size longer, and thus close tolerances can be maintained longer, it is claimed. Chips are cleared preventing loading in the flute and scoring the finish, resulting in improved finished holes in workpieces.

Carbide Tool Grinder

MODEL 260 carbide tool grinder which has a regular grinder for rough work mounted on the left and with the right side

designed for mounting of a cup wheel for finish grinding, has been manufactured by *Bradford Machine Tool Co.*, Cincinnati 4. The



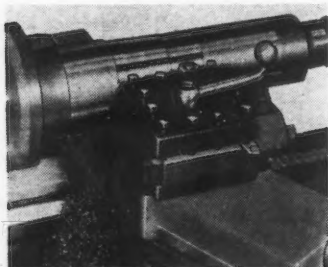
work table is precision machined and adjustable to desired angles and to height and wheel wear. The grinder is equipped with eye shield, tool tray, water pot, and guards with exhaust connections. Slope front is designed for maximum foot clearance.

Band Saw

DESIGNED for cutting light metals and wood, a 12½-in. band saw has been added to the line of machine tools manufactured by the *Globe Products Mfg. Co.*, Los Angeles 34. The saw is of rugged construction yet said to be light in weight as all the castings are aluminum. Blades from ¼ to ¾ in. in width and 78 in. long are used and the table may be tilted to 45°. Guides operate on ball bearings.

Tool Post Turret

DESIGNED for the LeBlond dual drive lathe, a tool post turret announced by *Enco Mfg. Co.*, Chicago, is said to provide ex-



treme rigidity for carbide-tipped tools which are supported by a flat base and clamped with at least three screws. Twelve stations, and

30° indexing provide a quick setup for threading. Each tool mounted has three different working positions and may be used for more than one operation. An equalizer spring keeps the tool block and clamping lever in constant contact eliminating chip interference and facilitating indexing. Maximum tool size is ⅝ x 1 in.

Midget Arbor Press

FOR use in assembling operations and adaptable for light metal and plastic cutoff operations, a midget arbor press made of few parts and featuring simple but sturdy construction has been produced by the *Tunstead Machine &*

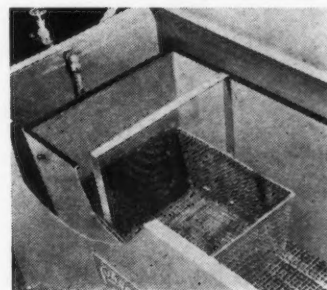


Tool Co., West Orange, N. J. All parts are said to be machined accurately from special tooling, and the tool has been designed with provisions for return spring and adjustable stop screw. Clearance under spindle is 3 in.; stroke length is 1 13/16 in. Diameter of work which can be handled measures 2¼ in.

Multiflow Tank Cleaner

FASTER and thorough removal of oil, grease, chips and other foreign matter that collect on parts during machining, drilling, boring, grinding and similar production operations is claimed for the Turbulator tank, an automatic, multi-flow, cold tank cleaner produced by *Turco Products, Inc.*, 6135 S. Central Ave., Los Angeles 1. Actuated by air volume, pressure differential and gravity, the Turbulator cleans parts with a combined liquid scrubbing and solvent action. Tiny metered orifices release compressed air which induces a flow of liquid in the inner tank. The cleaning compound is forced under pressure

through and around the parts, cleaning the surface and depositing particles in a static sludge compartment. There are four models with working space ranging from 1 ft



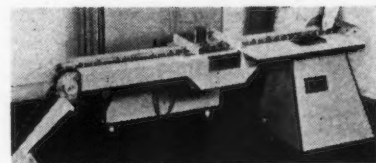
6 in. x 1 ft 6 in. x 1 ft 4 in. to 6 ft 6 in. x 3 ft x 2 ft 10 in. and working capacity ranging from 52 to 765 gal.

Die Holding Tapper

DESIGNED for internal and external threading in steel or any tappable material up to ⅜ in., a three-in-one tool which will take machine or hand taps, round split or button dies, or acorn dies, has been announced by the *Dorman Machine Tool Works*, 38 S. MacQuestern Pkwy., Mt. Vernon, N. Y. To thread with any of these three types of tools, it is necessary only to remove four screws, insert the tap or die holder assembly, and replace the screws. The assembly consists of a die holding clutch spindle, clutch bar, cover, and reverse gear. No. 1-RS assembly takes round split or button dies; No. 1-AC takes acorn dies; and No. 1-ST takes all standard taps. Capacity is ⅜ in.

Conveyor Belt Table

USED in conjunction with high frequency units or heaters, for handling of work parts for brazing, soldering, annealing, and

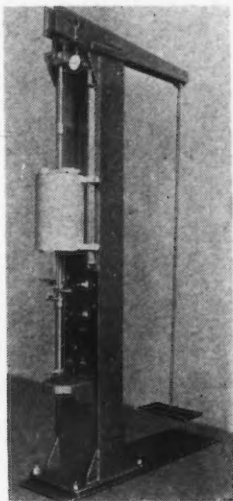


hardening, a conveyor belt table has been developed by *Lepel High Frequency Laboratories, Inc.*, 39 W. 60th St., New York 23. The conveyor belt is powered by a ¼ hp motor, and the belt speed may be

regulated over a wide range to accommodate a variety of applications. The conveyor belt proper permits the fastening of interchangeable supports to hold various shaped work parts in place. The load coil is movable and can be placed at the extreme left of the belt for hardening applications, at which point the part falls directly into a quenching tank.

Creep Testing Machine

FOR testing of metals at elevated temperatures to determine creep rate, a creep testing machine has been announced by the *Baldwin Locomotive Works*, Philadelphia 42. The machine is of the lever arm type, of welded steel construction and has a capacity of 12,000 lb (60,000 psi on 0.505 in. diam specimen). Accuracy guaranteed is with-

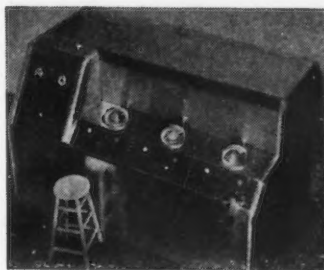


in 1 pct of load. The strain indication is by extensometer attached at pin holes at shoulders of the specimen and is read directly to 0.000025 in. on a motor-driven revolution counter by means of a follow-up contact method. The extensometer will operate to rupture, it is said. The accuracy of the strain unit is within 0.00005 in., approx. The specimen is heated by a small furnace, furnished as standard equipment and having a maximum temperature of 1600°F. Maximum possible elongation of the specimen is 1 3/4 in.

High-Vacuum Furnace

FOR the heat treatment of materials which are highly reactive toward gases, a high-vacuum furnace has been developed by *Eitel-McCullough, Inc.*, 1570 San

Mateo Ave., San Bruno, Calif. Capable of continuous operation at temperatures in the 3300°F region, the standard type consists of three chambers integrated into a single enclosed cubicle. Cycling circuits are incorporated so that one chamber can be in the treatment phase



while one is under preliminary pumping and the third is being re-loaded. With this furnace it is said to be possible to attain a production vacuum as high as 5×10^{-6} mm of mercury. Heating of the furnace is accomplished by tungsten elements which involve low voltage, thus minimizing ionization problems and permitting a rapid approach to full temperature. Each chamber of the furnace is equipped with an oil diffusion pump capable of maintaining high vacuum during the most difficult outgassing operations, it is said. Safety devices protect furnace parts against temperature extremes and the heating filaments against burnout. Consuming a total of 15 kw of power, the three-chamber unit has a total treating capacity of 175 cu ft.

Core Binder

BAKING capacity can be doubled, it is claimed, with the Aqua-set A, a new type of core binder developed by the *United Oil Mfg. Co.*, Erie, Pa. Heat acts to cure the bond, taking only minutes once the core has been thoroughly dried of moisture, it is said. Being water soluble, the binder is drawn with the moisture to the surface and sets up to a firm, hard top condition, leaving the center softer and more loosely knit, a trait favorable to a fast collapse on pouring. The hard surface on the core means castings of a smoother finish. The gas content is only about half that of linseed, which cuts blows and gas inclusions. Aqua-set A will bake out in a 300°F oven as soon

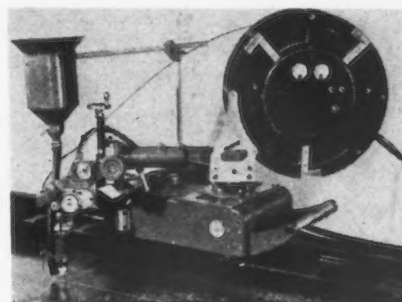
as the core itself is dry. A 400°F oven will bring test cores to top strength in 30 min., it is reported.

Cope and Drag Plates

DEVELOPED for use on jolt stripper or jolt rollover molding machines, a Master cope and drag plate set has been announced by the *Kindt-Collins Co.*, 12653 Elmwood Ave., Cleveland. The plates are cast aluminum, ground to close tolerances. Tough steel buttons are integrally cast in along the flask line, reducing flask wear and said to eliminate the necessity for the milling, drilling, countersinking and tapping operations required when steel strips are placed along the edges.

Portable Welding Machine

BUILT especially for welding light-gage sheet and light plate by the Unionmelt process, a portable automatic welding machine has been developed by the *Linde Air Products Co.*, 30 E. 42nd



St., New York 17. The machine weighs 190 lb and can be moved from one location to another as the work may require. It can be placed directly on the work and hand-guided, mounted on standard track or guided by a small structural angle clamped to the work for production welding. The welding head can be swung forward through 45°, tilted at any desired angle to either side, or positioned anywhere in a circle around the carriage. The head and rod reel are mounted on a high-speed carriage having stepless speed control from 7 to 210 ipm. The machine will butt-weld in a single pass, material from 16 gage to 3/4 in. thick. It will also make, in a single pass, positioned fillet welds with legs measuring 1/8 to 3/4 in.; nonpositioned fillet welds with legs from 1/8 to 3/8 in.; and

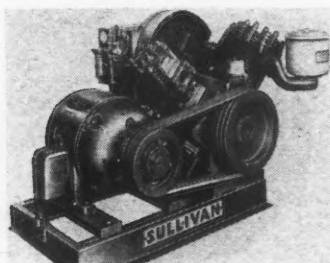
plug welds in material $\frac{1}{4}$ to $1\frac{1}{4}$ in. thick. Welding currents up to 1200 amp can be applied and coiled welding rods of $\frac{3}{32}$ to $\frac{1}{4}$ in. diam can be used.

Gas Cutting Torch

THE HC-39 Pacemaker is a heavy-duty gas cutting torch designed for rough usage and manufactured by *Liquid Carbonic Corp.*, 3100 S. Kedzie Ave., Chicago 23. Featuring the Gasweld free flow mixing chamber, the torch has a recessed tip seat designed to prevent damage if the torch is dropped on its head. This torch is 20 in. long, weighs $3\frac{1}{2}$ lb, and uses Gasweld tellurium copper cutting tips for oxyacetylene cutting.

Air Compressors

A LINE of two-stage, air-cooled stationary air compressors has been announced by the *Sullivan Div., Joy Mfg. Co.*, Oliver Bldg., Pittsburgh 22. These Unitair compressors are available in nine sizes with power requirements ranging from 15 to 100 hp and piston displacements from 81 to 590 cfm at 100 psi discharge pressure based on 60 cycle motor speeds. Compact



construction and smooth, vibration-free operation are said to make only a small foundation necessary. They are completely air-cooled. Three standard electric drives include built-in motor, direct-connected motor and V-belt drive. They are said to have a wide application as a compressed-air source for small manufacturing plants, in foundries or for stand-by service.

Hydraulic Hand Pump

A DOUBLE-ACTION hydraulic hand pump with a maximum operating pressure of 1500 psi has been developed by *Electrol, Inc.*,

85 Grand St., Kingston, N. Y., for general pumping operations. The pump, which weighs 8 lb, has a



$1\frac{1}{4}$ -in. bore and stroke and a volume of 1.5 cu in. per cycle. The load on the handle at the maximum pressure is 52 lb. The housing which is a foot-mounting type measures $7\frac{3}{16} \times 3 \times 2\frac{1}{2}$ in. and is provided with four mounting holes. Suction and pressure ports are $\frac{3}{8}$ in. NPT and are both located on the same face. The 22-in. pump handle travels through a max arc of 60° .

Conveyor Belt

SAID to be 250 to 400 pet stronger than previous rubber-fabric belts, a conveyor belt has been developed by the *U. S. Rubber Co.*, Rockefeller Center, New York, for conveying coal, iron ore and other bulky materials over long distances. The key to increased strength is a new textile construction of nylon and Ustex yarn that increases the permissible working tension of each ply two and one-half times and permits the use of more plies. The new belt also has the advantages of low stretch lengthwise and increased flexibility crosswise. These two features make it possible to build a longer and heavier belt with a minimum of stretch and excellent troughing qualities. The belt can be spliced easily and quickly, it is said, and repairs made by conventional repair techniques.

Expansion Joints

QUANTITY production of low pressure, large diameter, packless expansion joints ranging from 14 in. to 6 ft in size, has been announced by *MagniLastic Div., Cook Electric Co.*, Chicago 14. These joints are normally supplied in type 347 stainless steel to accommodate pressures up to 30 psi but other metals may be specified. The company has also announced a packless anchor base elbow ex-

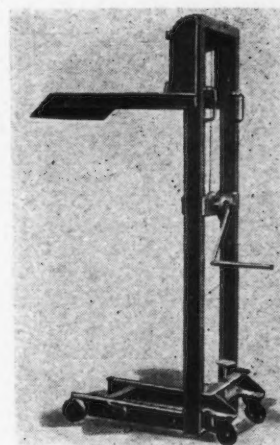
pansion joint which is supplied in all standard pipe sizes and in a choice of materials to meet special corrosive, temperature and pressure conditions.

Temperature Indicator

FOR use where a large number of thermocouple temperatures must be logged in a short time, the Speedomax high-speed indicator designed by *Leeds & Northrup Co.*, 4934 Stenton Ave., Philadelphia 44, can handle more than 100 thermocouples. Switching arrangements may be supplied to meet the needs of practically any application and key switches can be color-coded for convenience in identifying points. In addition to speed, the indicator is highly sensitive and accurate, even at low temperatures and short ranges.

Portable Elevator

TO fulfill the need for a short range lifting device of moderate weight where electrical power is not available the *Revolator Co.*, North Bergen, N. J., has marketed a lightweight portable elevator with



a lift of 55 in. and capacity of 1000 lb. The machine is designed for operations such as handling dies, heavy tools, tote boxes and cases, and is equipped with a floor lock and swivel casters at the hoist end. The crank-type hoist allows no gravity drop, it is said. Platform size is 22 x 24 in. to facilitate negotiating narrow aisles and overall height has been limited to 68 in. to permit average doorway clearance.

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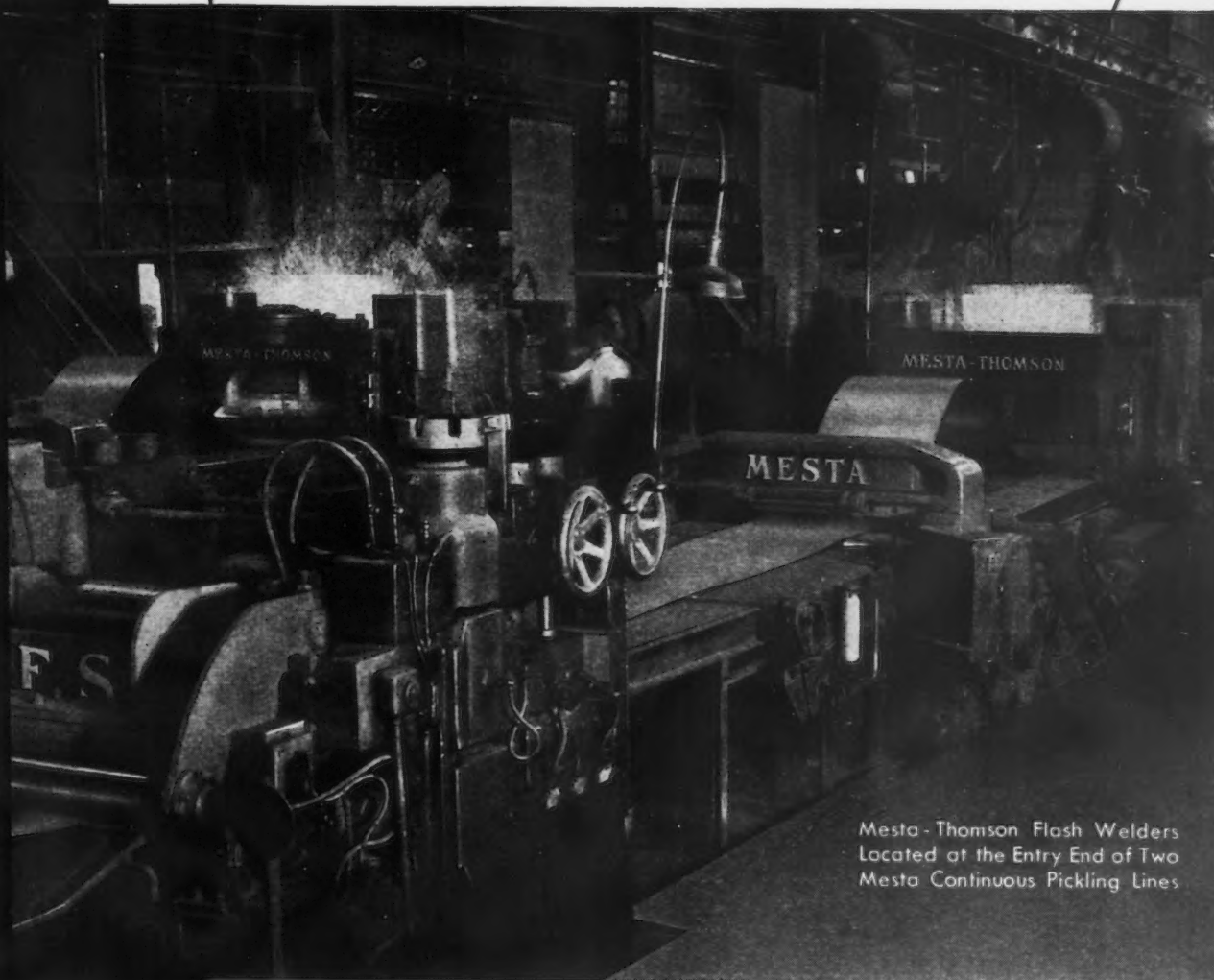
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Increase . . .

COLD MILL PRODUCTION
with **MESTA-THOMSON**
FLASH WELDERS



Mesta-Thomson Flash Welders
Located at the Entry End of Two
Mesta Continuous Pickling Lines

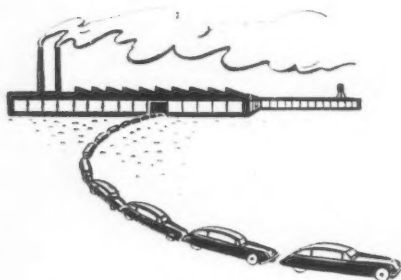
Cold mill production is increased when MESTA-THOMSON FLASH WELDERS are installed in your continuous pickling lines. They produce heavier coils, with butt-welded joints, suitable for cold rolling on today's high speed mills.

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS
MESTA MACHINE CO., PITTSBURGH, PA.

Assembly Line . . .

WALTER G. PATTON

• Layoff of auto plant workers expected to grow as steel shortage continues . . . Ford outlines its position to foremen . . . Jeep output passes the 10,000 mark.



DETROIT—While the strike at Inland Steel Co. has had to bear much of the responsibility for the layoffs of thousands of auto workers it is well known that the present steel shortages have been developing for some time. In a recent statement to the press C. E. Wilson, president of General Motors, made it clear that GM has been drawing heavily since last fall on its factory float of steel supplies. This has generally been true throughout the motor industry.

Chrysler Corp. has announced that 7500 workers will be laid off for a week because of a shortage of steel. In Pontiac 7000 workers at the GM Fisher Body Div. and the Pontiac Motor Div. have been idled for several days. It is reported that production at Buick has been drastically curtailed this week because of a shortage of bodies. Nash was forced to shut down for two days during April for lack of steel supplies and there have been layoffs on the night shift during May because of inadequate steel supplies. Nash production is said to be down 30 pct because of the continued shortages.

The Fisher Body Pontiac plant is reported to be short of several items and it is announced that "strikes and slow-downs in the plants of steel suppliers" will result in the temporary shutdown this

week or next of many Fisher Body plants in Michigan and elsewhere.

Despite shipments received Monday of this week, a Fisher spokesman said, the Fisher plant No. 1 at Flint has only enough steel of the various types required to operate through the end of this week and the early part of next week.

Lack of steel of the proper specifications for closed body front end frames at the Lansing Fisher Body plant is expected to result in a shutdown this week. The stamping plant at Grand Rapids is also hard-pressed for steel, the report disclosed.

"The situation is the immediate result of a strike in the plants of one of our major suppliers and a slow-down in the plant of another," Fisher has announced. "While the strike is settled and shipments will soon be resumed, the effect will be felt for many days to come. At no time since the end of the war have our suppliers furnished us with sufficient steel to operate our plants at capacity in spite of the fact that they are doing the best they can under very difficult circumstances."

To alleviate the pinch in Fisher Body and other GM plants it has been disclosed that steel stocks have been shifted among the various divisions but it has not been possible to continue production at the present high rate with the steel available.

Most sources here feel that steel shortages will continue to plague the industry for several weeks at least and that the full force of the Inland shutdown is yet to be felt. If this prediction is sound, it may be several weeks before auto production again passes the hundred thousand mark which had been attained during three out of four weeks during April.

THE Foreman's Assn. of America has announced its intention to call a strike of its members in Ford plants and Ford does not propose to accept this action lying down.

In a letter sent directly to foremen of the Ford Motor Co., Henry Ford II has outlined the company's position, reviewing in detail the points of difference between the company and the association.

The Foreman's Assn. has asked

us to extend the recognition of the association, Ford said. The company is willing to continue the present arrangement insofar as it relates to recognition; it will also recognize the association as the bargaining agent for its members. "We do not feel, however, that we should be accused of bargaining in bad faith simply because we do not desire to enlarge the recognition clause of our agreement," Ford explained to its foremen.

Ford is also opposed to the check-off of dues and assessments for FAA. Ford's position is that foremen who want to belong to FAA would prefer to pay their dues voluntarily and the company does not feel that the check-off should be used "to compel the payment of dues by those foremen who do not desire to affiliate with the association."

In the letter to its foremen Ford charged that FAA strives to minimize initiative and ability, to the detriment of the individual foreman.

"It is our confirmed belief that length of service with the company is a prominent factor in promotions and layoffs. We believe a man who has spent years with the company should receive every possible consideration in making assignments to positions. Only in extreme cases . . . should men with seniority be removed from responsibilities. The factors of ability and merit must, however, be recognized if we are to build and maintain a sound management organization."

Finally, Ford does not feel that membership should extend into the ranks of general foremen whom the company regards as having a "ranking position in the management team."

THE company, it was pointed out, has agreed to abide by the results of an NLRB election conducted among general foremen but FAA has refused to agree to such an election.

In concluding its statement of the company's position, Ford pointed out that FAA had argued convincingly that membership in the association would bring foremen closer to management—that it would encourage them to become and remain part of the manage-

Want to clean STAINLESS

ask EASTERN



REMOVING LUBRICANTS? Will vapor degreasing with perchlorethylene remove sulfurized cutting oils used in drilling holes in ES 18-8 (Type 302) switch plates?

ask



GRIME FROM EXPOSURE? What is the best method of cleaning soot and grime from polished stainless steel without scratching the finish?

**EASTERN
for the**



LEAD SOAPS? We use a lead soap lubricant in forming stainless plate, but it is difficult to remove. Is there a good solvent for these soaps?

**answer
when**



DISCOLORATIONS? Light rust spots have formed on some of our equipment we used to clean with steel wool. Can you suggest a cleaning agent?

**STAINLESS
is the**



COOKING STAINS? Can we use one of the new detergent soaps on our stainless steel kitchen equipment to clean up food stains, without affecting the high polish?

question

To keep stainless steel really stainless, keep it clean. And for methods of cleaning it quickest and best, ask Eastern. Problems like this are answered every day by Eastern Stainless' technical men. Many of the answers are given in the data-packed handbook, "Eastern Stainless Steel Sheets". Write for your copy, and when you need further help, get in touch with our nearest office or distributor.

JMLCo E-D1

EASTERN STAINLESS STEEL CORPORATION
BALTIMORE 3, MARYLAND



EASTERN STAINLESS

ment team. "I want to emphasize that the contrary has been true," Ford said. The Foreman's Assn. has developed into a "militant union, the effect of which has been to alienate some of our foremen. We certainly do not want this condition to continue and we do not believe that you do."

Ford asked its foremen to examine the facts in the situation carefully and determine for themselves if the differences between the company and the association "represent a reason for you to strike."

"If responsible foremen will carefully weigh the situation as it exists, in the light of reason, and do not allow themselves to be influenced by misrepresentations, there will be no strike."

"You may be assured that the company will carry on its efforts and will strive in every possible manner to avoid interruption of operations and will do its best to arrive at a workable solution of this situation."

From one point of view the chances of resolving the differences between Ford and FAA between now and May 17 when the FAA strike is scheduled to start appeared to be anything but bright. The fact that Ford and FAA have been in almost continuous negotiations over substantially these same points since early this year offered little hope in the present situation. However, the fact that the union must now back up its demands with

a strike that might cost its members heavily and that an extended Ford tie-up might stimulate Congressional action that could cost the union its very life places a somewhat different aspect on the question of a foremen's strike. Informed sources here are betting there will be a Ford foremen's strike unless the present situation takes an unexpected turn that cannot now be foreseen. The union claims 95 pct of its foremen are members of FAA.

MORE than 100,000 civilian jeeps have been produced by Willys-Overland since VJ-Day. About one-fourth of the production of postwar models has been exported to foreign countries where the diversified agricultural functions of these vehicles is especially needed, it has been disclosed.

The first civilian jeep was produced June 16, 1945. Present production is at the rate of about 10,000 units per month.

Willys is offering a new model 2T truck on May 18. The new truck is 2-wheel drive with 118 in. wheelbase. Gross vehicle weight is 4700 lb and the vehicle is rated at $\frac{3}{4}$ to 1 ton payload.

A Willys sedan delivery model is also scheduled to go into production soon. The new unit is essentially the same as the present Willys station wagon and uses the same chassis. Extensive modifications have been made to the body including closed panels and numerous changes in interior design.

CONVERTED JEEP: The latest unit in the Willys-Overland Motors line of utility vehicles is this new truck with conventional drive, a development from the Army Jeep. The latest Willys utility unit has a Jeep engine, independent front-wheel suspension and an overall length of 174-13/16 in.



First Quarter Chrysler Profit Is \$21.5 Million

Detroit

• • • Chrysler Corp. has reported net earnings of \$21,502,407 in the first quarter of 1947 compared with a net loss of \$829,928 in the same quarter of last year and profits of \$9,561,982 in 1941 and \$15,742,387 in 1940. K. T. Keller, president of the corporation, said that "the corporation's operations can now be considered as fully reestablished on a peacetime basis."

Inventories of Chrysler Corp. amounted to \$92,229,829, a reduction of \$14,080,344 since the first of the year, Mr. Keller said.

Recent price cuts ranging from \$25 to \$55 on Plymouth models, effective Apr. 7, and the recent wage increase of 11½¢ per hr to Chrysler workers are not reflected in the earnings statement, he added.

Sales of Chrysler products in the first 3 months of 1947 totaled \$317,041,077, including 223,540 passenger cars, trucks and commercial vehicles.

Reuther's Brother Runs UAW Training School

Detroit

• • • Although little has been said about it, the training being given international representatives of UAW-CIO in a series of classes at the Rackham Memorial Bldg. in Detroit each Friday morning is an important step in the educational program directed by Victor G. Reuther, brother of Walter Reuther, president of UAW-CIO.

The classes which are extending over a period of six weeks are sponsored by the UAW-CIO Education Dept. and the University of Michigan Extension Service. Subjects being considered include the relationship between wages, prices and profits, analysis of UAW-CIO social security demands and their costs and benefits. Included in the discussions are the social security provisions of both federal and state agencies.

Another part of the class routine is to analyze labor contracts and point out "pitfalls to be avoided," a union spokesman said.

NEUTRAL HARDENING

means just what it says . . .

No Scale No Decarb

. . . and an amazing volume of work can be treated in small, relatively inexpensive salt bath equipment.

A neutral salt bath provides an ideal means of heating carbon or alloy steel parts without any deleterious effect on the surface, such as scaling, pitting, carburizing or decarburizing. The bath completely seals out all air while work is heating . . . and a thin film of salt remains when work is removed, protecting it right up to the instant of quenching.

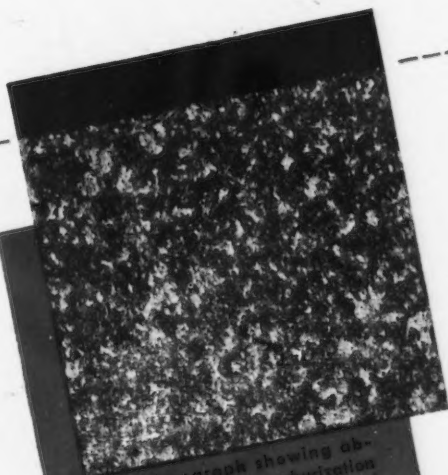
All "protective atmospheres," gas generating equipment and specially trained operators required for their use are eliminated . . . with corresponding savings in initial expense, operating costs and floor space requirements.

Heating cycles are 4 to 6 times faster than in atmosphere or radiant type furnaces—enabling small furnaces to handle a large volume of work—because heat is transferred by conduction rather than by convection or radiation, all surfaces of the work being in direct physical contact with the molten salt. Heating, therefore, is both rapid and uniform . . . eliminating the cause of most distortion.

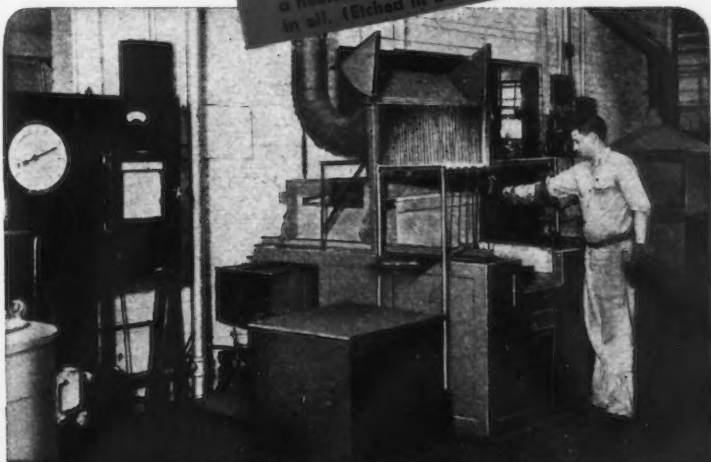
Unique internal heating principle of the AJAX furnace—utilizing patented, closely-spaced, immersed electrodes—produces an automatic electrodynamic stirring action within the bath which contributes to faster heating of the work and assures a temperature variation of less than 5° F. throughout the bath.

This internal heating feature also permits use of long-lived ceramic pots, avoiding contamination of neutral baths by metallic oxides produced by metal pots.

The advantages of hardening in a neutral salt bath can be further enhanced by use of an isothermal salt bath quench (martempering or austempering) to hold distortion to a minimum and eliminate quench cracking.



Photomicrograph showing absence of scale or decarburization in a section of S.A.E. 1095 Steel (X120) hardened at 1500° F. in a neutral salt bath and quenched in oil. (Etched in 2% Nital.)



Prominent machine tool manufacturer obtains full hardness in a wide variety of carbon and alloy steel parts without scale or decarburization in this AJAX Neutral Hardening Salt Bath Furnace—"the busiest furnace in the plant."

For more information on AJAX Electric Salt Bath Furnaces and their many uses—hardening, annealing, brazing, tempering, cleaning, quenching, etc.—metallurgists and metalworking executives are invited to write on their firm's letterhead for the new 72-page Booklet No. 116.

AJAX ELECTRIC COMPANY, INC.

Frankford Ave. at Delaware Ave., Philadelphia 23, Pa.

The World's Largest Manufacturer of Electric Heat Treating Furnaces Exclusively!

Associate Companies: Ajax Metal Co.

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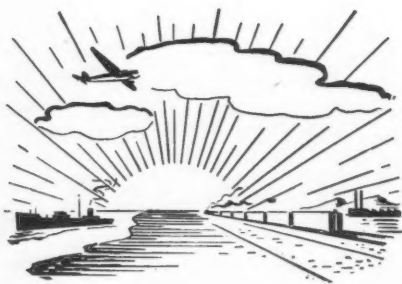


AJAX

HULTGREN

ELECTRIC SALT BATH FURNACES

•Steel committee of Western States Council may have new job on its hands . . . Southern California producers and fabricators operating at high rate with but few handicaps.



LOS ANGELES—The steel committee of the Western States Council which fought for the continued operation of the Geneva steel plant in Utah and supported Geneva Steel Co.'s appeal for lower freight rates to the Pacific Coast, now is considering taking on the job of turning another grindstone—this time to sharpen the axe of Kaiser Co., Inc., and, of course, western steel users.

In line with the avowed purpose of the group to reduce to the minimum the differential existing between eastern and western steel prices, members of the committee are being surveyed to determine how far it can go in supporting the Kaiser organization in its efforts to reduce its obligations to the Reconstruction Finance Corp.

No secret has been made of the fact that Kaiser Co., Inc., is carrying an excessively high indebtedness and that unless some relief is afforded, continued operation of its plant at Fontana, Calif., under present ownership is in jeopardy.

Western steel buyers are not unanimous in these views as to just what should be done. Many believe that if the Kaiser organization fails to meet its obligations to the RFC and the plant is taken over by the

government, that it will be put up for sale and will be bought by some other independent producer rather than by one of the "big steel" companies because of the big stick Tom Clark has been swinging to discourage "monopolies." This is the group that discounts the contribution made to the war effort by the plant and which insists that dollar for dollar should be paid by the present operators.

However, a large number of steel users have taken a more charitable view and indicate they would support any project designed to reduce the present burden of the Kaiser interests in recognition of the war accomplishment of the plant and with the selfish hope that as an independent producer operating under more reasonable debt, Kaiser Co., Inc., would stand as a bulwark against eastern producers.

Kaiser organization members have been in conference with leaders in the steel committee and while it is reported a tentative proposal to be made to the RFC has been arrived at, both groups have been reticent to reveal the details until after a poll of committee members has been taken.

Two months ago Kaiser spokesmen indicated that an extension of the debt period would be welcome and that perhaps an interest "holiday" would be of substantial help. Forgiveness of a portion of the approximately \$111 million original loan has not been discussed, but is known to be considered. It is further stated that more than \$28 million has already been repaid on the loan and that additional millions are in reserve for further payments.

Obviously, the fact that U. S. Steel purchased Geneva for approximately 20¢ on the dollar on open bidding doesn't set well with the Kaiser interests, but the fact that the Utah plant was a DPC plant and the Kaiser plant was built with an RFC loan spoils the analogy. Even if the RFC is sympathetic to loan forgiveness in part, the bureau would be faced with a problem in that probably every other corporation which had borrowed money from it would be requesting the same type of treatment.

Those persons in the steel busi-

ness who knew Henry J. Kaiser personally, and remember his entrance into the production of cement, magnesium and aluminum, are wagering that he would rather lose all of his interest in these fields than give up his steel plant in the orchards of San Bernardino County.

OPERATIONS at the Kaiser plant continue at high levels with new peacetime records being set. In the month of April the blooming mill turned out 46,520 tons; the plate mill 14,075 tons; and the merchant mill a new high of 16,329 tons. Total rolled products for sale for April were reported at 40,465 tons as against the previous record since the war of 37,755 tons. Since number six openhearth has been converted from tilting to stationary type it has exceeded previous production according to the company.

Bids for the construction of a 52 mile railroad from the newly acquired Eagle Mountain iron ore mine to the main line were to be opened this week and production at the mine is expected to start about the middle of the first quarter.

Scrap is moving into the Kaiser plant at a satisfactory rate primarily from the company's ship-breaking at Yard Three in Richmond, Calif., where three tankers and two cargo ships are scheduled for breaking before June.

The local scrap picture is easing somewhat and reports are that several large scrap presses are scheduled for early delivery in the area and will be operated by a well-known eastern dealer. Some minor consternation has been expressed by local buyers because tons of "beautiful" steel scrap are being buried under a few inches of asphalt as miles of trolley lines are being replaced by busses.

Approximately 60 ships are still awaiting breaking at the Terminal Island yards of the National Steel & Metal Co. because of a jurisdictional labor dispute there.

The \$10 million expansion program of Bethlehem Pacific Coast Steel Corp. here is progressing in spite of delays in delivery of essential equipment. The two new soaking pits are finished and foundations are about completed for the

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ONE
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ONE
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... with ¼" holes machined at the desired spacing.

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PINS

... used to select locations according to the desired pattern of holes.

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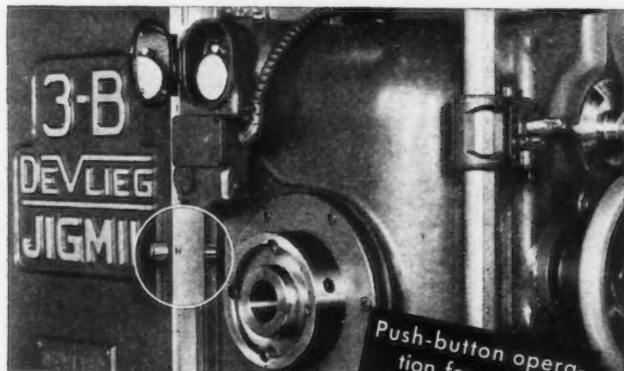
... accurately and dependably provides fool-proof spacing for machining repetitive parts *without jigs.*

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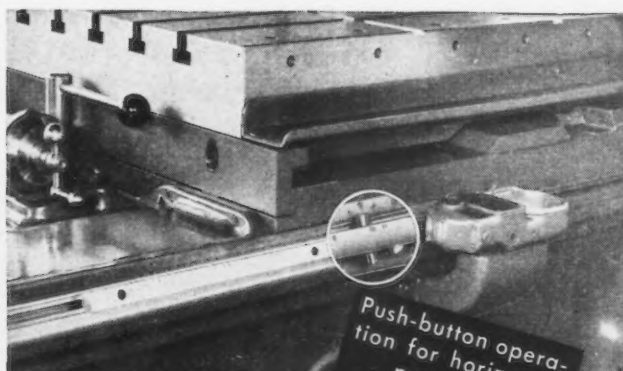
The finest known process for accurately spacing and machining holes.

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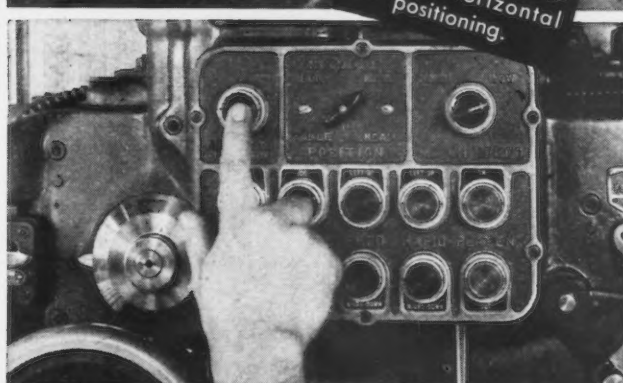
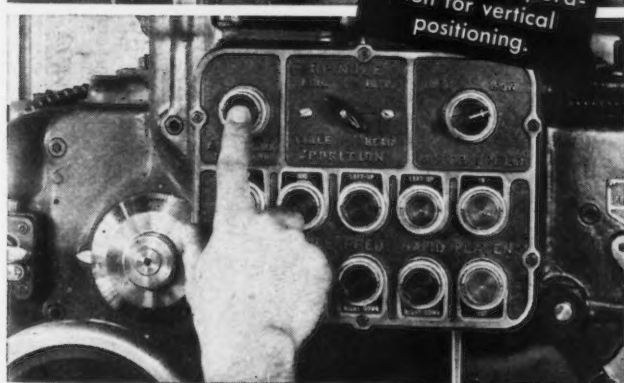
Illustrated at right is one vertical bar and one horizontal bar with pins used as masters on the 3B DeVlieg Duplitrol Equipped Jigmil. Below are illustrations showing how all spacing is done in response to push-button operation.



Push-button operation for vertical positioning.



Push-button operation for horizontal positioning.



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32 in., 2-high reversing blooming mill and the Morgan 21 stand combination bar and rod mill.

Columbia Steel Co.'s Torrance plant is operating at near capacity producing about 5500 tons of sheets and 6000 tons of structurals and bars per month, with the former mill operating on three turns and the latter on two turns.

Whether Columbia Steel Co. will be permitted to purchase Consolidated Steel Corp.'s assets is a major question discussed here, and the general opinion is that Tom Clark will relent and approve the

of strip, this area would be deluged with tubing according to men in this field. There are now seven potential manufacturers here all equipped with machinery and ready to roll but still lacking material. Pacific Tube Co., the war-built plant recently bought by private capital and the first tube plant in Los Angeles, is operating on a stop and go basis because of the strip shortage.

Sheet metal continues tight although some of the smaller fabricators threatened with closing because of sheet scarcity a few

STEEL fabricators anticipate increased activity in the area and are planning accordingly. Apex Steel Corp., Ltd., founded 18 years ago, is typical of independent fabricators expanding to meet present and future demands.

This company is investing approximately \$400 thousand in increased facilities which will give it approximately 28,800 sq ft under roof for the structural steel department and 16,000 sq ft open runway and a capacity of approximately 600 tons per month. A Colby gantry crane with a capacity of 45 tons at an 80 ft boom length facilitates handling steel.

The new 10½ acre site on Slau-son Ave. will have 150,000 sq ft under cranes for fabrication and a gray iron foundry will be installed later to replace that now in use on Eastern Ave. which began operations in 1929.

The new facilities are expected to be ready for use the latter part of this month. Officers of the company are: Earle V. Grover, president; D. L. Swinnerton, vice-president and secretary; and L. M. Bryant, treasurer.

On availability of steel hinges the opening of the new Fisher Body Div. plant of General Motors Corp. at Van Nuys, according to A. T. Clausen, veteran GM executive who came here from Lansing, Mich. to head the operation. Expectations are that the plant will begin producing Chevrolet bodies about Sept. 1 and will employ 800 men.

California, noted for so many "firsts" is glad to be in second place in at least one phase of the economic picture and would like to be lower according to W. E. Lawrence, industrial relations counsel for the Merchants and Manufacturers Assn. of Los Angeles. According to Mr. Lawrence, organized labor in California collects \$40,500,000 annually in dues which is second only to the collections of \$65,000,000 annually in New York State.

While the labor situation is generally quiet, the International Assn. of Machinists has filed intention to strike at the Interstate Engineering Corp. affecting between 300 and 400 employees, and at the Douglas Aircraft Co. Santa Monica plant. Both sides are optimistic over an early settlement.

PIG STICKER: One reason Ace Foundry, Huntington Park, Calif., bought a North American "Navion" was so ex combat pilot Jack DeSantis, son of company secretary H. L. DeSantis could fly it anywhere to buy pig iron. On one flight alone the plane paid for itself when Ace bought 100 tons of pig iron before the competition could get to it. They also make rush shipments like this one of 24 17-lb castings which Jack DeSantis is unloading at a farm machinery makers' plant.



transaction. It is pointed out that it would be a relatively simple matter for the U. S. Steel Corp. to build its own fabricating facilities if the Dept. of Justice remains adamant, and that after all, Bethlehem Steel Co. has its own fabricating plant in Alameda, Calif., operated by Bethlehem Pacific Coast Steel Corp. and that no cry of monopoly has been raised there.

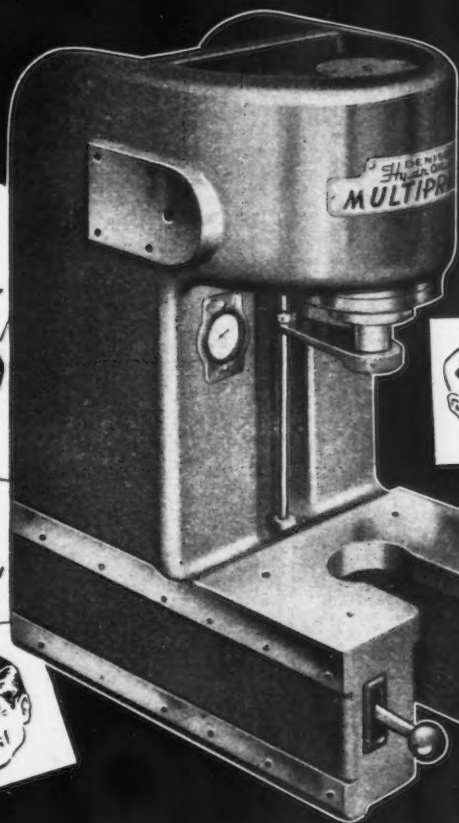
APPARENTLY construction of the proposed 50,000 ton per year sheet mill here announced last year by sheet metal users has been delayed and the original sponsors seem to have lost interest. However, it is known that an experienced steel plant operator is still working on the project.

If it were not for the shortage

months ago are now receiving increased shipments and are more optimistic.

Hope for early operation of the Kaiser-Frazer Long Beach auto assembly plant is as dim as the long shadows cast by the assembly lines which have yet to produce their first car. Delay in start of operations is attributed to the scarcity of motors and until these are produced in sufficient numbers to keep the Willow Run plant operating at capacity, there is little hope of getting the local plant rolling. Approximately \$4½ million has been put into this facility and whether the Kaiser-Frazer organization will accept some of the tempting offers they have received for the plant and start later from scratch to construct a new one is not known.

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"THE FINEST PROVING
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HAS EVER FOUND..."



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"THEY CERTAINLY WITHSTAND HARD USE.
OURS OPERATE 24 HOURS A DAY -
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"DOES TWICE THE
WORK IN HALF
THE FLOOR SPACE!"



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Washington . . . L. W. MOFFETT

• **Army-Navy standardization proceeds satisfactorily . . . But work is slowed by lack of personnel and funds . . . High costs slow building activities . . . Commercial construction drops 5 pct.**



WASHINGTON — Although the Army and Navy can report considerable progress over the past year in development of joint engineering drawing practice and other standards, a joint numbering system and joint specifications work has gone ahead more slowly than had been anticipated. The work has been limited to a considerable extent due to insufficient personnel and budgetary cuts.

For example, out of an original list of 24 drawing practice standards projects, work has proceeded on only 11, while the remaining 13 have been approved but shelved until personnel is available.

The actual work on these standards is performed by technical task committees appointed by the Joint Army-Navy Committee on Standard Drawing Practices, which operates within the framework of the Army-Navy Joint Specifications Board.

Material for a proposed standard is gathered from the Army and Navy, from civilian technical societies and other standardization groups, and from industrial practices. This material is carefully reviewed, circulated to interested activities, and developed into stand-

ards after all comments have been received and reviewed.

Of the 11 projects for which task committees had been assigned, three new drawing practice standards had been approved and were being printed as of Apr. 15. These covered drawing sizes, abbreviations, and welding symbols.

Final drafts on those covering screw threads, construction format, and electrical and electronic symbols are being prepared for submission to the Specifications Board for approval.

Proposed standards on general drawing practice, production format, and dimension and tolerancing are being circulated for comment to industry and the War and Navy Depts.

A DRAFT on surface roughness is being circulated to the same groups, while one covering mechanical symbols is being prepared based on a survey of commercial and military requirements.

The 13 projects which will be undertaken when personnel is available cover: Drawing titles; drawing numbers and part numbers; types of drawings; materials; definitions; architectural symbols; mathematical symbols; structural symbols; welding nomenclature and definitions; welding charts; welded joints; non-destructive test symbols; and revision drawings.

In addition to the above drawing practice standards, two other standards are being developed by the Specifications Board. These are a standard antifriction bearing numbering system, which has been submitted to the Board for approval, and a standard color code for compressed gas cylinders and pipelines.

Establishment of an Army-Navy common parts numbering system is one of several interrelated phases of a federal cataloging standardization program being developed by the War and Navy Depts. and the Bureau of Federal Supply.

The aim of the cataloging program is to establish positive identification for each item of supply in the Federal Government.

The Army-Navy Munitions Board is currently supporting the federal cataloging program, but is considering the advisability of assuming

the responsibility for establishing a fully unified cataloging system for the armed forces in the event the federal system is not officially established.

MEANWHILE, the Army and Navy have gone ahead in establishing other joint projects. Included are a Joint Army-Navy Manual of Standard Descriptions for Electronic Equipment and Material and a joint cataloging system for medical items.

Currently under development is a standard Navy stock numbering system designed to classify and identify each naval supply item by an individual stock number which will be used throughout the naval establishment. Its development will permit the Navy to convert with considerable economy to either a federal system or an Army-Navy system whichever is adopted.

Closely tied in with the standards projects are the joint Army-Navy specifications, of which over 400 have been issued. These specs cover the whole range of military supplies.

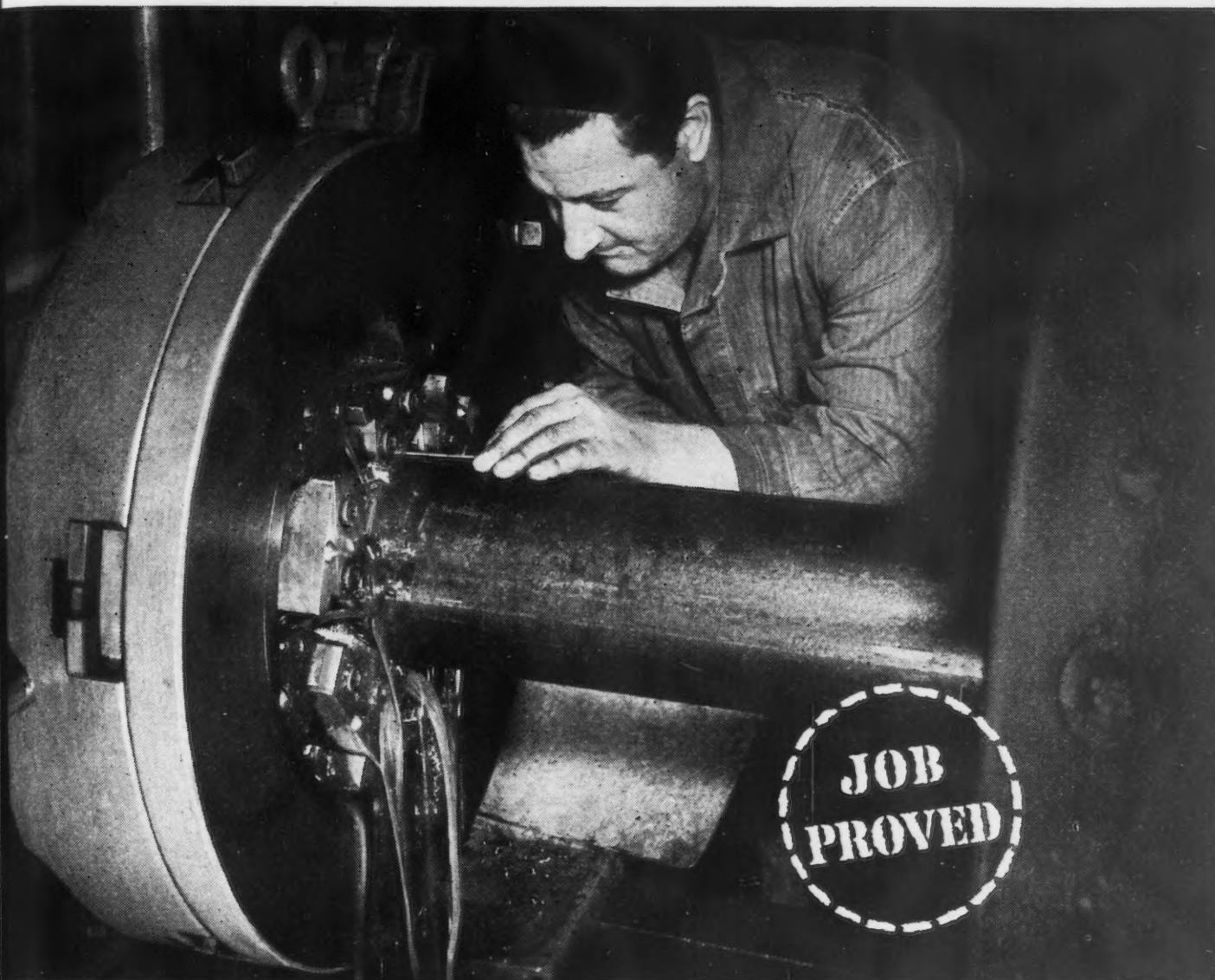
In addition, the ANMB has issued a series of specifications to describe the basic materials being purchased for stockpiling.

For many common items having wider application, federal specifications are developed. (THE IRON AGE, Mar. 6, p. 124.) A series of 14 Joint Packaging Instructions has also been issued to describe the packaging and packing of material ranging from machine tools to dynamite. These are in addition to 41 joint specifications on packaging procedures.

ZOOMING costs of material and labor continue to disturb government officials who, despite a slight improvement in building activity during March, have now resigned themselves to the belief that 1947 construction will fall from two to three billions short of their optimistic December forecasts of at least \$21.6 billion for the year.

Although the 1947 first quarter construction was 38 pct above the same period in 1946 and the March building activity exceeded that of the March 1942 wartime peak, construction for the month recovered

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only about 7 pct from the previous month's decline.

The government's chief worry, of course, is concerned with residential construction which showed a recovery of only \$20 million for the third month of the year to bring the total for homebuilding and repair to about \$332 million or a third of the month's total. Non-residential and commercial building, virtually all financed with private money, dropped 5 pct during the month. As a result, the March gain was largely in types of construction which always show a seasonal rise, such as public utilities, highway, and farm construction.

While a large portion of the February slump was caused by the fewer number of work-days and unseasonable weather, early March brought to light the increasing trend toward resistance to high prices. Officials who see the federal housing projects going into a decline are calling for price cuts at all levels—not only by real estate men but by material producers, fabricators, merchandisers, contractors and labor.

"THE challenge is one of costs," declared Housing Administrator Raymond M. Foley last week. "The cost of producing housing has risen under postwar conditions to a point where further rise would threaten failure of continued absorption at the rate of production of which the industry is capable. There appears no good reason why building costs should rise higher."

From 1939 through March 1947, the American Appraisal Co., a private research organization, estimates that construction costs as a whole have risen approximately 102 pct. This is substantially corroborated by studies of the Commerce Dept. which show that the prices of building materials alone are currently standing at 95 pct above 1939 levels with more than half of this increase having been recorded within the past 12 months.

Most noticeable of the rise in material costs was in the lumber industry where prices rose 192 pct above 1939 as compared with a rise of 33 pct in structural steel, plumbing and heating equipment for the same period. Two-thirds or 128

pct of the lumber increase was registered over the past 12 months as compared with 18 pct for the three metal products.

Likewise, prices of construction machinery advanced another 3 pct during the first quarter 1947, according to the Bureau of Labor Statistics, bringing overall prices to 30 pct above 1939 levels, about 20 pct higher than prices at the end of the war. This moderate rise, in comparison with other industries, is largely attributable to the fact that the industrial equipment producers in general, through volume production, claim to have managed to absorb much of the 70 pct estimated wage increases in the industry as well as about 40-50 pct of the 133 pct increase in raw material costs, the Machinery & Allied Products Institute reports.

At the same time, other BLS figures reveal that by the end of the first quarter of 1947, one of labor's major objectives—wartime wages for peacetime hours—has almost been attained in the manufacturing industries as well as in the nonmanufacturing and trade groups. With some exceptions, of course, March 1947 average weekly earnings in these groups were running about the same as the January 1945 wartime peaks while the average work week was shorter by 5 hr. However, Administrator Foley feels that the question is not so much the actual wage rate as one of productivity as long as wage rates are "reasonable."

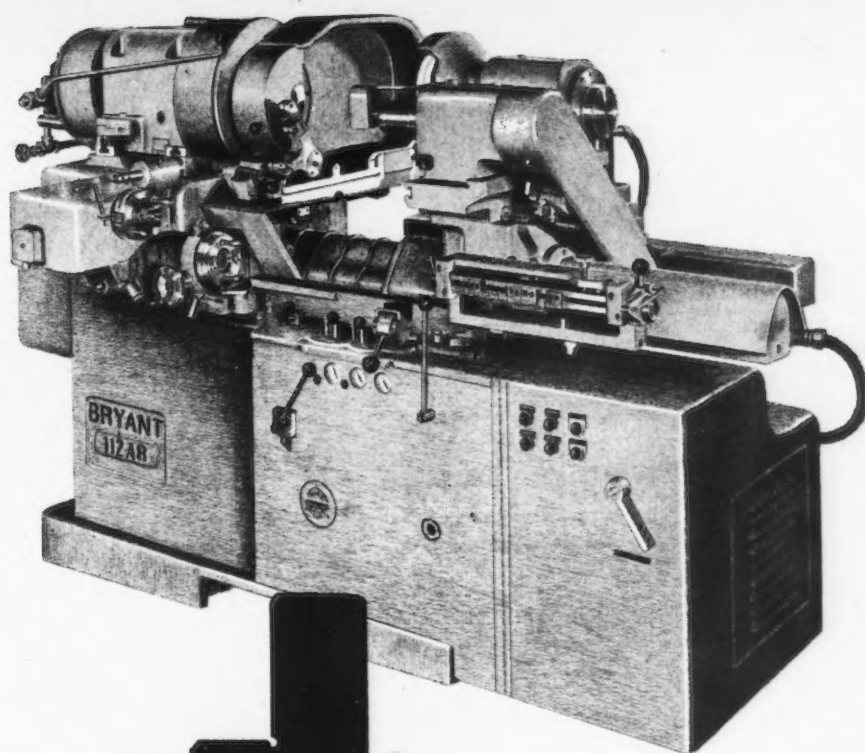
"Labor must justify its wage rates with full productivity whether engaged in on-site or off-site operations," the housing head declared.

Construction activity was employing 1.6 million workers in March of this year, including shop employees as well as workers at the site. Partly attracted by high wages and partly because of the apparent long-term demand for both housing and commercial building, there has been a noticeable increase in building trades apprenticeship; at the end of the first quarter of 1947, there were nearly 47,000 establishments taking part in the Dept. of Labor's 2256 apprenticeship programs, including 3230 sheet metal establishments which were taking part in the program.

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BY J. R. WILLIAMS





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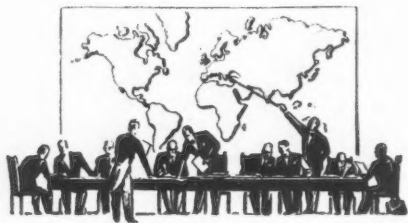
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• Iron and Steel Board reports progress made on steel industry modernization projects . . . Outlines efforts to convert steel furnaces from coal to oil burning.



LONDON—A 6 months' progress report by the British Government's Iron & Steel Board was made by Sir Archibald Forbes, Chairman of that body at a recent press conference. In the first half year of its existence, the Board has taken up most of its time with the consideration of the proposals of the trade association and the steel industry for the modernization and development of the steel producing facilities in the United Kingdom (see THE IRON AGE, May 23, 1946, p. 114).

The exact amount of progress on the various projects is hard to determine from the chairman's remarks. He did make it clear, however, that gaining all the necessary government approvals for a new steel industry is a complicated piece of business in England. He summarized progress to date as follows:

"The plan envisaged projects estimated to cost about \$672 million spread over a period of about 7½ years.

"Projects, the cost of which amounted to about 10 pct of the total, had been licensed and commenced prior to the setting up of the Board. Projects likely to cost over \$400 million have been generally approved by the Board and about two-thirds of these have been approved in complete detail.

Further projects involving an expenditure of approximately \$80 million have been submitted to the Board in detail or outline and are under consideration now."

Pointing out that assessing the progress is difficult because of costs, Sir Archibald stated that very roughly half the projects envisaged in the plan have been approved and work is under way on the majority of them.

He explained, however, that either before or after the Steel Board reaches its decision with respect to the plans, various interested government authorities have to consider the project from their standpoint. As examples, he indicated that the Board of Trade and the Ministry of Town and Country Planning are interested in the general location of industry, the Ministries of Labor and Works on the availability of constructional and operational labor, the Ministry of Health on the availability of housing, the Ministry of Fuel and Power on the availability of coal and electricity and gas supplies, and he might have added the Treasury on the availability of dollars for required imports. The final decision is made by the government on the combined advice of the various departments.

WITH a large number of separate development programs covering England, Scotland and Wales to be considered both in detail as separate units, and as an integrated unit for the whole of Great Britain, and a number of government departments interested in each, a detailed status report of which sections have been approved in detail by all departments and which are only in process is almost impossible to ascertain.

In the official statement of the Chairman of the Board, considerable effort was made to explain exactly what the functions of the Steel Board were in relationship to the modernization proposals. Among the aspects from which the Steel Board studies the proposals are the following:

- (1) Their relationship to any general plan.
- (2) Their relationship to current and probable future de-

mand and existing and projected capacity.

- (3) The availability and source of raw materials including fuel.
- (4) Their relationship to the most modern practice in Britain and abroad on the criteria of maximum efficiency and fullest economy in cost.
- (5) The economics of the location regarding the supply of raw materials and delivery to consumers.
- (6) The degree of rationalization among the different plants and the integration of manufacture within individual plants.
- (7) The availability of labor, housing and amenities.

Thus there will appear to be a certain amount of duplication of function, particularly in numbers three and seven above. It is assumed that in fact the Steel Board considers these factors in cooperation with the other government departments, rather than as separate, but overlapping functions.

WITH reference to the making of foundry pig iron, the Council of Iron Producers is preparing an integrated plan, for the modernization of its industry, which will be presented to the Steel Board in the near future. A few separate proposals for modernizations in certain companies have already been approved.

Due to the large number of small iron foundries in the United Kingdom, it has been necessary for the Board to send out a questionnaire to determine how much modernization has taken place in recent years and how much is anticipated. The results of this survey are now being prepared.

With respect to the responsibilities of the board in supervising production, distribution and imports of steel, Sir Archibald reviewed the fuel and transport difficulties which have reduced the potential 1947 steel ingot production from about 15.12 million tons to possibly as low as 12.88 million tons. He disclosed that imports from all sources were less than 134,400 tons, and stated that the

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Coming Events

London

• • • Mr. Aneurin Bevan, British Minister of Health and veteran leader of the British Socialists, told a mass meeting of North Wales quarrymen at the May Day celebrations of the North Wales branch of the National Union of Quarrymen at Blaenau Festiniog recently, that what the Labor Government had done in the field of nationalization so far had been fairly orthodox. "But," he said, "when the government sets about nationalizing the steel industry, then the band will begin to play."

Even such projected steps as the nationalization of electricity and gas were comparatively orthodox, but when the question of the steel industry came up it was a different story. In approaching the steel industry, they were approaching the fundamental transference of the power to the people and already the armies of opposition were beginning to form up against the government.

There would be suggestions made that some parts of the industry were efficient and satisfactory and so should be left alone, but he was opposed to the government taking over the cripples and leaving the good things in private ownership.

"We are taking it over, not because it is inefficient, but because we think that the steel industry contains too much power to be left in private hands," he said.

prospects of improving this figure do not seem good, at least until the end of the year.

The chairman outlined efforts which have been made to increase steel production in Britain, notably by the conversion of steel furnaces from coal to oil burning, the fullest practicable use of electric furnaces for the manufacture of carbon steel and the introduction of the continuous weekend working of steel furnaces.

THE conversion to oil burning had already reached a stage when oil consumption was at a rate of about 280,000 tons a year (representing a saving in coal of 504,000 tons a year) and it was hoped that by the end of the year this would have risen to not very far short of a rate of 1.12 million tons a year (representing a saving in coal of 2,016,000 tons a year). The pressure on industry in general to

convert to oil burning had, however, created difficulties in the supply of the necessary equipment, with a shortage of light steel plates being one of the most serious problems. The bringing in of electric furnaces to manufacture carbon steel had been impeded by the shortage of electric power.

The introduction of the continuous working of steel melting furnaces came into force early in April, and the chairman indicated

Fifty Italian Foundry Workers to Aid Britain In Manpower Shortage

London

• • • The first 50 of the 220 Italian foundry workers selected in Italy have now arrived in England, and have been sent in small groups to foundries in various parts of Britain. It has taken 6 months to get started on this plan for bringing over these urgently needed foreign workers, and it is hardly a rate of progress which offers much hope of any rapid solution to Britain's manpower problems by bringing workers from abroad.

Delay in sending the workers over has allegedly been caused by differences arising in Italy with the Italian Government, but arrangements for receiving them in England have hardly progressed rapidly. Although the trade unions concerned have agreed in principle to employment of the Italian foundry workers, there are many safeguards and stipulations.

They must be paid recognized trade union rates of wages and must become temporary members of the appropriate trade union while they are in Britain. They may be employed only where suitable British labor is not available, and if British labor is forthcoming they must be repatriated at once. Employers must be found who are willing to engage Italians, and the consent of the workpeople directly concerned must be obtained before an Italian is allowed to enter a particular factory.

It has been difficult to find jobs satisfying all these conditions, apart from the problems of finding places where the men can live. It

that it is therefore too soon to say what its effect will be. In a full normal year it might have been expected to produce an extra 840,000 ingot tons, but the full benefits cannot be obtained in the absence of adequate supplies of fuel.

The present overall average consumption of scrap is just over 60 pct and there is no possibility of increasing this with the current supply of scrap, according to his statement.

is hoped, however, that arrangements will be speeded up to receive further batches of workers for the seriously under-manned foundry industry.

Norway May Buy Mines

Oslo

• • • Following negotiations between the Norwegian Government and the Dunderland Iron Ore Co. of the United Kingdom, the government is likely to buy the company's mines and railway in northern Norway for Kr. 8,000,000 (\$1,600,000), according to the *London Financial Times*. The company originally asked Kr. 15,000,000 (\$3,000,000) for its properties.

Owing to the need for repairs, it has not been possible to resume operations at the mines on a large scale since the end of the war. Negotiations between the Norwegian Government and representatives of the company have been going on for some time, but it is believed that final decision on the price to be paid has not yet been reached.

French Appoint Group

Paris

• • • A modernization committee has been created for the French foundry industry. The officers are as follows: President, M. Norguet, engineer; vice-president, M. Aveline, controller of electrical industries under Ministry of Production; secretary, M. Jean Laine, professor at the Foundry High School. Among the members are: MM. Jean Cavalier, director of the Pont-a-Mousson Foundry Co.; Didierjean, technical director of the Paris & Outreau Steelworks; Le Thomas, general manager of the Technical Centers of the Foundry Industries.

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Tygoflex Plastic Handles All Plating Solutions (including alkaline cleaners) at temperatures up to 230°F.

Thicknesses up to 1/4" in a single dip . . . effective resistance to all plating solutions . . . will not take a plate, resists salts pick-up . . . upper temperature limits up to 230°F. . . bonds tightly to steel, copper, brass . . . these are just a few of the properties of Tygoflex, U. S. Stoneware's new liquid plastic protective coating.

Tygoflex (a creamy, viscous, solvent-free liquid plastic) is applied by dipping or brushing. When fused under heat (350°F. for 15 to 30 minutes) Tygoflex converts to a tough, black material resembling in appearance and physical characteristics a glossy live rubber compound of medium hardness.

MEETS ALL BASIC REQUIREMENTS

Tygoflex protects racks through all metal finishing operations . . . is unaffected by temperature changes. Tygoflex is unusually tough . . . withstands severe mechanical abuse . . . is easily repaired if damaged. High dielectric strength keeps down current losses. The smooth, glossy surface minimizes dragout.

SOLIDS CONTENT 100%

Tygoflex differs from any other air or heat cured coatings in that it has a solids content of 100%. There are no volatiles

of any kind . . . no solvents, thinners, or reducers. Tygoflex is completely non-flammable . . . no explosive or fire hazard.

EASY TO APPLY

Tygoflex requires only *one* dip to build up a controlled thickness ranging up to 1/4". If a tight bond to the rack is required a coat of Tygoflex Adhesive is applied by brush. The rack is then heated, and while still hot is dipped into Tygoflex. The Tygoflex coated rack is then subjected to heat (350°F. for 15 to 30 minutes) and is ready to use.

FIELD TESTED . . . FIELD PROVED

Tygoflex has been thoroughly proved in rigorous field tests in leading electroplating plants. Tygoflex protected test racks have chalked up 4,000, 5,000, 6,000 hours of continuous service, with no signs of deterioration.

HOW YOU CAN BUY TYGOFLEX PROTECTION

Tygoflex protection is available to you in two ways: (1) If you have application facilities you may purchase the material and apply it yourself; (2) if you prefer, we will coat your racks and other equipment in our plant. Either service is available through leading electroplating supply houses, everywhere.

How you can prove TYGOFLEX yourself:

Write for a free Tygoflex Test Rack (a miniature rack, 6" long). Examine it carefully, test it any way you wish. When you've satisfied yourself it's the finest rack insulator on the market, then — send us one of your production racks. We'll coat it for you and return it, without charge.



U. S. STONEWARE

Since 1865 • Akron, Ohio

Use TYGOFLEX TO PROTECT:

- Plating racks
- Dipping baskets
- Tanks, plating and storage
- Tank grids
- Bus bars
- Pickling hooks
- Plating and tumbling barrels
- Pipe
- Thermometer wells
- Fans and housings
- Fume ducts
- Valve bodies
- Filters
- Drying equipment
- Rollers
- Tools, control handles

When Exposed to:

- Electroplating solutions such as: copper, nickel, chrome, silver, cadmium, zinc, tin, etc.
- Pickling
- Descaling
- Electro cleaning
- Electrolytic polishing
- Hydrofluoric acid etching
- Electrical currents
- Mechanical abuse and corrosive action of chemicals
- Anodizing
- Bonderizing
- Phosphatizing
- Dichromatizing
- Etching solutions
- Alkaline cleaners

PERSONALS

• • •

• **C. L. Cummins**, founder in 1919 of the Cummins Engine Co., Inc., Columbus, Ind., has been elected chairman of the board of directors, and **J. I. Miller** has been elected president of the company. Mr. Miller came to the company in 1934 in the capacity of vice-president and general manager and has been with the company continuously since that time except for the years 1942-44, when he served in the U. S. Navy. Other officers elected are: **V. E. McMullen**, executive vice-president; **R. E. Huthsteiner**, vice-president and general manager; **H. L. Knudsen**, vice-president of engineering; **Carl R. Fox**, vice-president and works manager; **D. C. Bottorff**, secretary and treasurer; **R. E. Lay**, assistant secretary and assistant treasurer, and **Edwin G. Crouch**, assistant secretary.

• **Stuart E. Sinclair** has been appointed chief metallurgist of the Greenfield Tap & Die Corp., Greenfield, Mass. He was for a number of years connected with the National Bureau of Standards and with the Vanadium Corp. of America. In 1936 he became metallurgist for the Geometric Tool Co., which position he held until his elevation to the position of chief metallurgist for all Greenfield plants including Geometric Tool Co.

• **Charles A. Upson**, former president, has been elected chairman of the board of the Upson Co., Lockport, N. Y., and **W. Harrison Upson**, former executive vice-president and treasurer, has been elected to the presidency of the company. **Henry W. Schmidt**, who was secretary, has been named secretary-treasurer.

• **Harvey Gaylord** has been elected treasurer of Bell Aircraft Corp., Buffalo. He has been associated with the company since 1941 and has been assistant treasurer since 1945.

• **L. C. Grimshaw** has been appointed metallurgical engineer of the clad products division of Jessop Steel Co., Washington, Pa. Prior to joining Jessop Steel Co. in 1947, Mr. Grimshaw was chief metallurgist for 5 years and superintendent of the clad steel division for 2 years at Latrobe Electric Steel Co.

• **Frederick V. Geier** has been elected president of Cincinnati Milling & Grinding Machines, Inc., Cincinnati, sales subsidiary of the Cincinnati Milling Machine Co. **Walter W. Tangeman**, **Swan E. Bergstrom** and **Nelson F. Caldwell** have been elected vice-presidents; **Ferris M. Angevin**, treasurer, and **Millard Romaine**, secretary. **C. F. Roby**, now assistant to the general manager of Cincinnati Milling & Grinding Machines, Inc., has recently been elected a vice-president of the parent company.



WALTHER MATHESIUS, director, U. S. Steel Corp. of Delaware.

• **Walther Mathesius**, president of Geneva Steel Co., Utah subsidiary of U. S. Steel Corp., has been elected a director of U. S. Steel Corp. of Delaware, Pittsburgh. At the time the U. S. Steel Corp. of Delaware was formed in 1938, Mr. Mathesius was named vice-president in charge of operations, and a director, with offices in Pittsburgh. He left these positions in 1943 to become president and a director of Geneva Steel Co.

• **H. B. Newell** has been re-elected president of the Ohio Forge & Machine Corp., Cleveland, and **R. B. Tripp** has been elected executive vice-president of the company. These elections were shown incorrectly in the May 8 issue.

• **Robert S. Douglas** has been appointed secretary to Frank Purnell, president, Youngstown Sheet & Tube Co., Youngstown, Ohio, succeeding Paul Haas. Mr. Douglas joined the company 10 years ago as a timekeeper in the seamless tube mill. **Richard R. Eppley**, assistant superintendent at the Brier Hill coke plant, Youngstown Sheet & Tube Co., has been appointed superintendent to succeed the late **Emil F. Vogel**.

• **William J. Mericka**, **Charles J. Smith** and **Lewis J. Thomas** have been elected to the board of Empire Steel Corp., Mansfield, Ohio. Mr. Mericka is the senior partner of an investment firm. Mr. Smith is affiliated with Smith, Bellamy, Dill & Hopkins, and Mr. Thomas is associated with H. M. Byllesby & Co., Inc. **Samuel E. Magid**, who has been director of the company for 5 years, has been elected chairman of the executive committee of the board. Vacancies in the board of directors occurred due to the resignation of **Henry A. Roemer**, president and chairman of the board of Sharon Steel Corp., and **B. E. Kibbee**, treasurer and director of the same company.

• **Robert P. Tyler** has been elected vice-president in charge of sales for MacwhYTE Co., Kenosha, Wis. He was formerly general sales manager.

• **Com. John Metcalfe** has become general manager of all operations of the FitzSimons Steel Co., Inc., of Youngstown, Ohio, wholly owned subsidiary of All American Industries, Inc.

• **R. H. Kutscher** has been appointed manager for the Pittsburgh sales territory of Electric Machinery Mfg. Co. He succeeds **H. L. Renking**, who becomes district manager of the southwestern territory with headquarters at Dallas. Mr. Kutscher for the last 8 years has been manager of the service department.

• **Lee Stratton** has been named domestic sales manager of the Crosley Div., Avco Mfg. Corp., Cincinnati. He has been associated with Crosley since 1944 as sales manager, refrigeration, and has assisted in the development of other lines.

• **E. J. Parker and R. H. Sjoberg** have been appointed vice-presidents of the ACF-Brill Motors Co., Philadelphia. Mr. Parker, formerly assistant general manager in charge of manufacturing, will serve as vice-president, manufacturing. He joined ACF-Brill a year ago when he was placed in charge of production at the Philadelphia plant. Mr. Sjoberg, also formerly assistant general manager, has been associated with ACF-Brill since 1938 in various engineering and sales capacities.

• **Robert P. Nichols** has been appointed assistant domestic sales manager for R. G. LeTourneau, Inc., Peoria, Ill. Coming to LeTourneau after serving overseas in the Navy, Mr. Nichols became a field engineer in the installation department, and more recently moved to the export division as sales supervisor.

• **John Gulick** has been appointed Chicago office manager of Borg-Warner International Corp. Mr. Gulick was administrative assistant in the engineering division of Boeing Aircraft during the war and was previously affiliated with the General Motors Sales Corp., Seattle. In addition to his office managership duties, he will direct the overseas sales activities for the automotive products of R. N. Nason & Co., whose exports are handled by Borg-Warner. **William Mohr** has been appointed regional manager in the Caribbean zone of Borg-Warner International Corp. For the last 2½ years Mr. Mohr has represented the American Brake Shoe Corp. in the Caribbean area.

• **Dave S. Ferree** has been appointed district manager of the new Philadelphia sales office of the Falk Corp.

• **Henry C. L. Johnson** has been appointed advertising manager of Rheem Mfg. Co. **Carlton A. Johanson**, who has been manager of public relations and advertising for the Rheem company, has resigned. For the past 10 years, except while serving in the Navy, Mr. Johnson has been with Sylvania Electric Products, Inc. He will make his headquarters in the New York office of Rheem.



M. W. REED, vice-president in charge of engineering, Carnegie-Illinois Steel Corp.

• **M. W. Reed** has been elected vice-president in charge of engineering of Carnegie-Illinois Steel Corp., Pittsburgh, a U. S. Steel subsidiary. Mr. Reed has been chief engineer of the company since 1939. Previously he was vice-president in charge of operations of the American Steel & Wire Co., another U. S. Steel subsidiary.

• **George P. F. Smith** has been elected a vice-president of Borg-Warner Corp., Chicago. Mr. Smith also is president of Marbon Corp., a Borg-Warner subsidiary.

• **Wayne Z. Friend** has been appointed assistant section head of the corrosion engineering section of the development and research division of the International Nickel Co., Inc., New York. Mr. Friend has been with the development and research division of International Nickel since 1937.

• **William A. Anderson** has retired as sales representative of the Hercules Powder Co. in the Buffalo district. He had been with the company there since 1921.

• **J. Herbert Myers**, who has been secretary of the Lodge & Shipley Co., Cincinnati, and a director, has been elected vice-president in charge of machine tool division sales. **Harry J. Buettinger**, who has been associated with the company as treasurer, has been elected to fill positions of both secretary and treasurer.

• **George H. Deike** has been elected a director of Follansbee Steel Corp., Pittsburgh, to replace **J. H. McCoy** who has resigned. Mr. Deike is president of Mine Safety Appliances Co., and Catalyst Research Co.

• **Earl A. Tanner and Robert C. Ross** have been elected new directors of Inland Steel Co., Chicago. Mr. Tanner is president of two Inland subsidiaries: Milcor Steel Co., and Inland Steel Container Co. Mr. Ross has been vice-president and a director of Joseph T. Ryerson & Son, Inc., Inland's largest subsidiary, since 1932.

• **N. C. Michels**, formerly a member of the engineering staff of the Gary steel works of the Carnegie-Illinois Steel Corp., has been appointed chief engineer of the Laclede-Christy Clay Products Co. of St. Louis. **E. H. Krautheim** has been appointed assistant chief engineer in charge of plant engineering and maintenance and **Les Mueller**, assistant chief engineer of the arch and wall division. **Herman W. Weber**, formerly chief engineer of the arch and wall division, has been added to the executive staff as consulting engineer.

• **Ernest F. Becher and J. Allen Ferguson** have been elected directors of the Barcalo Mfg. Co., Buffalo. Mr. Becher, president of Chandler Industries, Inc., which is to be consolidated with Barcalo, also has been elected vice-president of the latter company. Mr. Ferguson, also a vice-president, has been with Barcalo since 1944.

• **H. R. Moorhouse**, secretary of Arthur G. McKee & Co., Cleveland, and **James Krumhansl**, treasurer of the company, have been elected to the board of directors.

• **Glen Hoover** has been assigned to direct accounts of the American Rolling Mill Co. in the Canadian territory, working out of the Buffalo and New York offices. Mr. Hoover was formerly district manager in Cleveland. **Don H. Hogan**, formerly district sales manager of American Rolling Mill Co. at Boston, has been appointed manager of the Cleveland district.

• **Francis Bradley** has been elected chairman of the board of directors and **Richard T. Nalle** was elected president of the Midvale Co., Philadelphia, to fill the vacancy. Mr. Nalle has been executive vice-president of the company for several years and previously was a vice-president of Henry Disston's Sons.

• **Paul J. Maddox**, assistant vice-president of the Laclede-Christy Clay Products Co., St. Louis, has been appointed general sales manager of the refractories division of the company.

• **Douglas M. Lyon** has been appointed sales manager of the Porter-Cable Machine Co., Syracuse, N. Y. **Harvey L. Ramsay**, former sales manager, becomes vice-president in charge of merchandising.

• **Herburt S. Riddle**, consulting industrial engineer, has been made industrial relations manager of the American Bosch Corp., Springfield, Mass., to succeed **Harold J. McCormack**, resigned.

• **W. T. Fink**, president of Form Products Co., Inc., Minneapolis, has been appointed distributor of Vascoloy-Ramet Corp. in the Minnesota area.

• **Edward R. Taylor** has been appointed merchandising manager, Hotpoint Inc., Chicago. He comes to Hotpoint from Zenith Radio Co.

• **William J. Koenen**, sales coordinator of the Milwaukee division for the Cherry-Burrell Corp., has been appointed factory superintendent. He has been with Cherry-Burrell since 1938. **Sidney S. Norris** has been made Mr. Koenen's successor.

• **E. J. Davis**, former sales representative for Westinghouse Electric Supply Co., has been appointed lighting specialist with headquarters at Milwaukee.

• **Leo A. Wise** has been appointed purchasing agent of the American Safety Razor Corp. of Brooklyn. Mr. Wise started with the company over 26 years ago as a stock boy in the factory. For the past 15 years he was assistant purchasing agent.



DAVID M. HALLIER, vice-president, National Tool Co.

• **David M. Hallier**, sales manager, has been made vice-president of National Tool Co. of Cleveland. He had been head of the sales department since 1946.

• **Henry H. Knapp** has been appointed a sales representative, railway equipment division, American Welding & Mfg. Co., Warren, Ohio. Mr. Knapp, who joined the company in 1945 as service engineer, has been connected with the engineering staff in the development of the Amweld line of railway equipment.

• **Walter M. Reynolds** has been appointed controller of the Ithaca, N. Y. and Detroit plants of the Morse Chain Co. Mr. Reynolds was previously employed at Hughes Tool Co., Houston, where he was controller of the main plant. During the war he was in full charge of the accounting department of the Curtiss-Wright plant, St. Louis.

• **J. R. Lewallen**, traffic manager of Anderson-Prichard Oil Corp., Oklahoma City, Okla., has been elected vice-president in charge of purchasing and traffic to fill the vacancy created by the resignation of C. A. Prichard, who has become associated with another company. **R. C. Arnold**, assistant purchasing agent of Anderson-Prichard Oil Corp., has been promoted to the position of purchasing agent.

• **W. A. Seifert**, senior partner of Reed, Smith, Shaw & McClay, Pittsburgh, has been elected a director of the Latrobe Electric Steel Co., Latrobe, Pa. **J. E. Workman** has been elected vice-president in charge of sales and **G. D. Billock**, formerly of National Steel Corp., has been elected assistant treasurer. Mr. Seifert succeeds **B. F. McFeely**, board chairman of McFeely Brick Co., who resigned because of ill health after serving on the board of directors since the company was organized in 1913.

• **Harold C. Duggan** has been appointed assistant to the president of the Howard Engineering & Mfg. Co., Cincinnati. He has been sales engineer for the company in the Detroit area.

• **John F. Considine**, previously assistant district manager of the Chicago plant of American Car & Foundry Co., has been appointed district manager of the plant.

• **Alexander Gabay** has resigned as president and general manager of the Helwig Mfg. Co. Inc., of St. Paul.

• **Robert C. Lewis** has been appointed installation manager for R. G. LeTourneau, Inc., Peoria, Ill. Mr. Lewis spent 10 years with the Cincinnati Highway Dept. and 5 years with the U. S. Army Engineers. Another addition to the installation department is **Keith Thompson**, as applications engineer. For the last 7 years he has been a LeTourneau service engineer. In the western sales area, **O. A. Williams** has been appointed western sales manager, with headquarters at the company's Stockton, Calif. office. He had formerly been LeTourneau district representative, and more recently eastern sales manager. **E. M. Ferguson**, with LeTourneau for over 8 years as district representative, assistant western sales manager, then western sales manager, has been appointed eastern sales manager. His office is located at Washington. **C. D. Fey**, formerly industrial sales representative for the Western United States, now serves R. G. LeTourneau, Inc., in that capacity for the entire country. His headquarters is at the company's Peoria, Ill. plant.

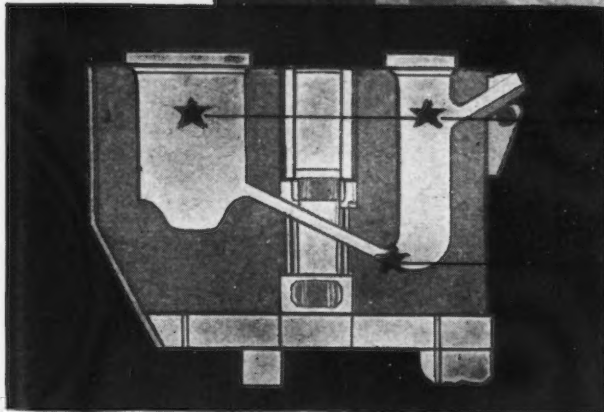
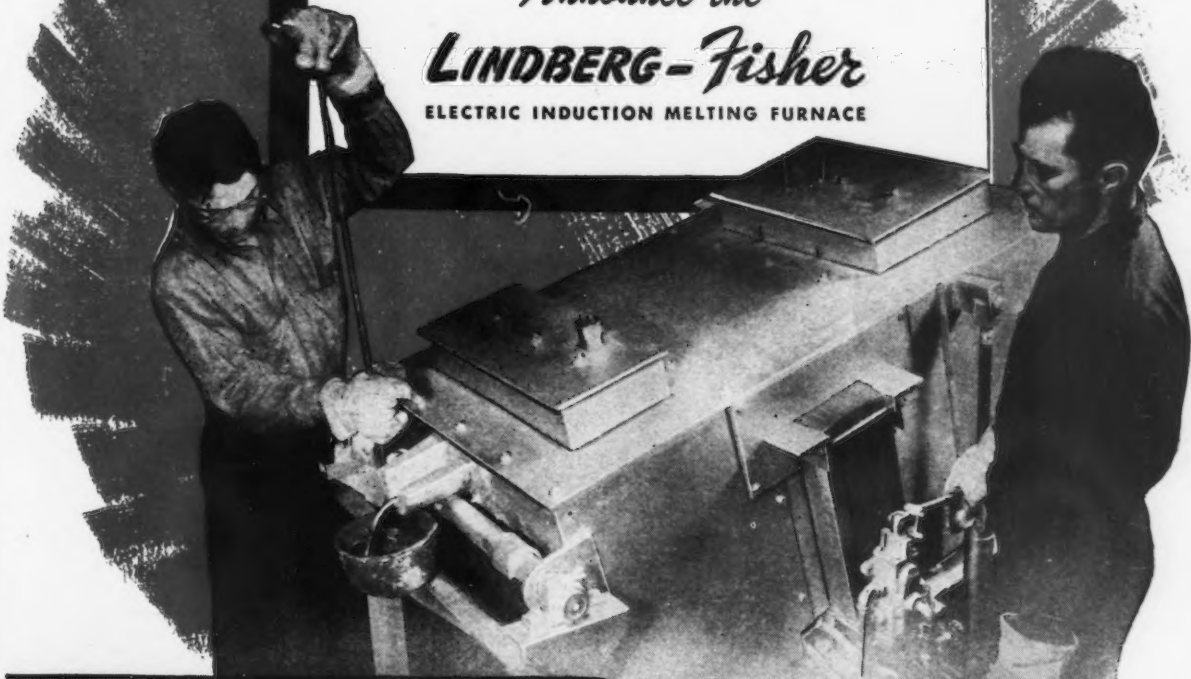
(CONTINUED ON PAGE 108)

To bring you
A COMPLETELY NEW MELTING FURNACE...
TWO GREAT NAMES IN INDUSTRIAL FURNACES JOIN FORCES

LINDBERG ENGINEERING CO.
 Manufacturers of Electrical Equipment and
 Heat Treating Furnaces

FISHER FURNACE CO.
 Since 1906 Leading Manufacturer of
 Non-Ferrous Melting Furnaces

Announce the
LINDBERG-Fisher
 ELECTRIC INDUCTION MELTING FURNACE

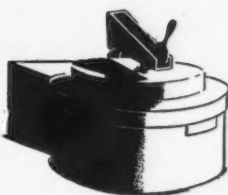


TWO OUTSTANDING DESIGN IMPROVEMENTS

DUAL CHAMBER construction permits continuous pouring...
 charging cold metal within reasonable limits does not affect
 pouring temperature.

STRAIGHTLINE MELTING CHANNELS are easy to clean,
 therefore ideal for aluminum as well as other non-ferrous alloys.

Watch for further details. For additional information write Fisher Furnace Division,
 Lindberg Engineering Company,
 2452 West Hubbard St., Chicago 12,

LINDBERG  **FURNACES**

Dear Editor:

STEEL DISTRIBUTION

Sir:

In your issue of Apr. 17, p. 103, we note with interest your report of a hearing on the distribution of steel affecting small users. We would be interested in getting a transcript of this meeting. Can you tell us to whom we should apply for such a paper?

JAMES B. BAILEY
President

American Pressed Steel Co.
Philadelphia

● A copy of the transcript of the hearings on steel distribution, held by the Senate Small Business subcommittee is available for examination at any time at the office of the Senate Small Business Committee in the Senate Office Bldg. Also, a copy of the transcript itself may be obtained from The Alderson Reporting Co., 306-9th St., N.W., Washington. It runs 171 pp. for which a charge of 40¢ a page is made. While a great many Congressional hearings are eventually printed for sale at a minimum charge as Senate or House Documents, we understand at present that there is no indication as to when this particular hearing may be so printed.—Ed.

ELECTROSTATIC PAINTING

Sir:

We are interested in an electrostatic painting machine capable of putting out 100,000 v dc. Your help on this request will be very much appreciated.

GLENN R. INGELS
Metallurgical Consultant

Cook Heat Treating Co. of Texas
Houston

● The manufacturer of electrostatic painting equipment, Harper J. Ransburg Co., Indianapolis 7, may be able to furnish you the machine you want. This process was described in the article, "Electrostatic Spraying and Detearing" which appeared in the issue of Oct. 19, 1944.—Ed.

INVOLUTE SPLINE

Sir:

Please send me a reprint of "Engineering Aspects of the Involute Spline," published in the Apr. 3 issue.

WILLIAM J. HOGAN
Chief Engineer

Stapling Machines Co.
Rockaway, N. J.

OBsolete VESSELS

Sir:

We are seeking information concerning the buying of damaged and obsolete vessels for scrapping, mentioned in the news item on p. 103 of the Apr. 17 issue. Could you please tell us whom we should contact in the Navy Dept. about this.

V. W. CHVILICEK
Chvilicek Welding & Machine Co.
Racine, Wis.

● If you are interested in the purchase of combatant vessels you should write to U. S. Navy Vessel Disposal Office, New York

Naval Shipyard, Brooklyn 1, N. Y.; for small vessels, Director of Small Vessel Sales, U. S. Maritime Commission, Ship Sales Div., Washington 25, D. C.; and for large vessels, freighters and the like, Director of Large Vessel Sales, U. S. Maritime Commission, Ship Sales Div., Washington 25, D. C.—Ed.

HOT PAINT

Sir:

In the Newsfront of the Apr. 3 issue, there appeared an item pertaining to a new inert paint for metals capable of withstanding a temperature of 2400°F. Please tell us where more information on this point may be obtained.

C. MACPHAIL
Works Engineer

International Nickel Co. of Canada Ltd.
Port Colborne, Ont.

● Mr. Harry Sweeney of the National Copper Paint Corp., 1760 W. Diversey Parkway, Chicago 14, developed the coating.—Ed.

ALSO, JAMES TAUB

Sir:

The authors of the article on "Strain Analysis by Means of the Photogrid" which appeared in the Sept. 12, 1946 issue feel that in the reply to Professor Murphy's statement made in Dear Editor of the Feb. 6 issue that further credit should be given to James Taub. Mr. Taub, formerly of the Case School, was engaged in the development of the techniques described in the article and should have been given full credit for his part in this work.

W. F. BROWN, JR.

Case School of Applied Science
Cleveland

BERYLLIUM COPPER

Sir:

If available I would like to obtain a copy of two articles appearing in the Apr. 26 and July 26, 1945 issues, entitled "Beryllium Copper" and "Sintered Beryllium for X-ray Tube Windows."

ROBERT E. GOULD
Metallurgical Laboratory

Raytheon Mfg. Co.
Waltham, Mass.

THREAD ROLLING

Sir:

The articles you publish on thread rolling are always of great interest to us. The latest by J. W. Batchelder are up to the usual high standard and would be useful in our organization. Could you send us four copies? We would also like to support the request made in the Feb. 6 issue by T. B. Smith, president of John Has-

sell, Inc., Brooklyn, that you publish more articles on cold heading.

T. AFFLECK
Technical Manager

Acton Bolt, Ltd.
London

● Four copies of Mr. Batchelder's articles on thread rolling have been forwarded.—Ed.

10,000 TRADE NAMES

Sir:

Have you made a complete reprint of the "10,000 Trade Names"? If so, please advise the cost in order that we may send you our check for one copy.

H. B. GAYLORD
District Manager

Carpenter Steel Co.
Reading, Pa.

● The Directory of 10,000 Trade Names is now available to subscribers at a cost of \$3.00 each for one or two copies; \$2.50 each for three to nine copies; and \$2.00 each for 10 or more copies.—Ed.

EQUIPMENT INVESTMENT

Sir:

We would appreciate receiving, if available, a reprint of the article by A. C. Danekind, entitled "Keeping an Eye on Your Equipment Investment," appearing in the Sept. 5, 1935 issue.

WALTER C. GEORGE
Gaylord Container Corp.
St. Louis

WHOPPING BUMPERS

Sir:

I have read the Newsfront item in the Apr. 22 issue: "Because of wider and heavier bumpers, some of which bend around the fenders, it is estimated that today's automobiles are about 500 lb heavier than prewar models." Assuming that the prewar bumpers weighed 50 lb apiece the new bumpers which increase the weight of the car by 500 lb, would have to weigh 200 lb each. If each of them is 8 ft long, allowing for the curve around the fenders, I figure they must be pressed from $\frac{3}{4}$ x 10-in. plate. I have often longed for bumpers made of similar stuff. Please tell me what car manufacturer is using them.

A. M. SCOTT

Ole K. Olsen Co.
New Orleans

● That would indeed be a whopper of a bumper, Reader Scott. A lost line, "changes in design and the use of heavier structural members" plus the "wider and heavier bumpers" total the estimated 500-lb. increase.—Ed.

IDENTIFYING METALS

Sir:

I am interested in the article in the Oct. 17 issue, "Quick Methods for Identifying Metals" appearing on p. 58. Would it be possible for me to obtain a copy?

EDWARD KRUSZYNSKI
Chemical Laboratory

Carter Carburetor Corp.
St. Louis

Wheelabrator *speed cleaning* *cost reduction* *proven for* **FARM IMPLEMENT MANUFACTURERS**

The production manager of a well-known concern has this to say about the airless Wheelabrator: "Our work runs from light agricultural castings—1 to 35 pounds—to tractor manifolds and 3 cubic foot cement mixers bowls up to 145 pounds. Average daily heat runs 15 to 18 net tons. Your 48" x 42" Tumbblast replaced 3 tumbling mills and the men it would take to operate them. Our casting cleaning costs are now only 1/3 of what they were in former years. Labor

costs run as low as \$1.75 per net ton." What the airless Wheelabrator has done for others, it can do for you. Ask for a demonstration . . . or write for further information and literature.

Typical Implement Foundries using the WHEELABRATOR

International Harvester Co.
The Oliver Corporation
Massey-Harris Co., Ltd.
John Deere Tractor Co.
Allis Chalmers Mfg. Co.
David Bradley Mfg. Co.
J. I. Case Co.
American Fork & Hoe Co.
Minneapolis-Moline Power Implement Co.
Wood Bros. Thresher Co.

REPORTS FROM USERS

12 Tumbling mills and an airblast room were replaced by a 66" Wheelabrator Swing Table at Western Land Roller Co., Hastings, Nebraska. 10 to 14 tons of grey iron castings are cleaned in from 6 to 8 hours. Typical work, which is completely cleaned in 4 minutes, includes 3' x 4' side frames, irrigation pump castings, feed grinder blowers, turbine pump heads, bowl assemblies, etc.

The 48" x 48" Wheelabrator Tumbblast at Continental Gin Co., Birmingham, Alabama, cleans the entire daily production in about 2 hours. It previously required 9 hours to clean these castings using 6 tumbling barrels. An average load in the Wheelabrator Tumbblast consists of 1400 lbs. of mixed castings, and the cleaning time ranges from 5 to 8 minutes.



American

WHEELABRATOR & EQUIPMENT CORP.

(FORMERLY AMERICAN FOUNDRY EQUIPMENT CO.)

510 S. Byrkit St., Mishawaka, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

Industrial News Summary . . .

- **Auto Shutdown Laid to Unbalance**
- **Raw Steel Rate Climbs to 94.5 Pct**
- **British Again Attempt to Buy Steel**

UNBALANCE in steel inventories has been the major reason for temporary shutdowns in the automotive industry during the past few weeks. Before the situation is clarified more shutdowns can be expected as automobile makers attempt to accumulate banks of supplies which will support the recent high operating rate at most automobile plants.

The steel strike in the Chicago district 2 weeks ago and a temporary slowdown at a midwestern steel plant are only contributory factors to the crisis in steel distribution which has been brought about by the acquisition of too much of one item and too little of another. Unqualified statements on steel shortages tend to reflect on the ability of the steel industry to produce and ship enough steel to meet current demand. The industry has been setting new records when its operations have not been interfered with by material shortages, strikes and late deliveries on new rolling equipment.

The overall demand for steel products is so great and the pressure for delivery so insistent that periodically some temporary shutdowns in fabricating plants are bound to occur until distribution patterns have been corrected. In recent weeks, except for the strike in the Chicago district, the trend in steel output has been upward and every attempt has been made to maintain operating levels at around 97 pct of rated capacity for the industry.

THIS week the ingot rate advanced 3.5 points to 94.5 pct of rated capacity. Indications are that there will be further gains next week. Even the steel plant affected by a strike 2 weeks ago hopes to make up the 110,000 net ton loss in finished steel products by the end of the third quarter. Customers of this plant have been told their quotas will not be cut but that deliveries temporarily may be a few weeks late.

For several months both productivity and morale, according to some industrial officials, have been on the upgrade. A fresh spurt has come about as the result of the wage increases in the steel industry and the addition of liberal provisions to working conditions. Industrial relations officials say that the feeling between management and labor is more constructive at the present time than has been the case for years.

Despite the encouraging signs of better employee productivity steel industry officials are utilizing every method at hand to reduce unit costs in steelmaking. The wage bill, the higher prices for mechanical and rolling mill equipment and the higher level of prices of raw materials have forced all steel firms to embark on a campaign to cut costs, increase output and yet maintain the current wage structure. This problem at times has produced a reaction from customers, especially when it resulted in concentrating production on high return steel items.

HAVING developed new markets and encouraged increased use of flat-rolled steel products, the steel industry is now facing the challenge of meeting the unprecedented demand for flat-rolled steel items. High speed strip mills for cold-reducing sheets, ordered some time ago, are behind in delivery and some of the unbalance in automotive supplies may be laid to this situation. When new cold-rolled mills are installed in accordance with previous plans some of the pressure from Detroit will be relieved.

The "tempest in a teapot"—so some thought—stirred up by steel stampers over their inability to obtain hot-rolled sheets and strip has gone far beyond the industry's backyard. Officials in the Federal Trade Commission and in the Small Industry Advisory Committee are now actively attempting to run down the complaints of the stamping industry over alleged changes in sales and marketing procedures in the steel industry which they claim are adversely affecting them.

From some areas comes the report that steel consumers are not ordering steel as far ahead as they did a few months ago. Current pattern in one instance shows that new orders have only amounted to 60 pct of the steelmaking capacity of one plant during the past 2 months. Nevertheless the hesitancy of steel consumers who have quotas on the mills to order more than 60 days ahead has not made steel easier.

CAPT. A. H. REID, representing the British Iron & Steel Federation, arrived in this country last week to attempt the purchase of 1¼ million tons of semifinished steel for Great Britain. He was also commissioned to try to get firm orders on sheets and light plates. Coming at a time when American automobile makers are shutting down their plants because of steel shortages and unbalanced inventories, it is unlikely that Captain Reid will be able to place a firm order carrying specified delivery dates for the material he desires.

An attempt by Sir Andrew Rae Duncan, Federation head, to purchase 2 million tons of semifinished steel for Great Britain failed last fall and subsequent orders amounted to about 50,000 tons. American steelmakers probably will be willing to accept orders subject to an "if, as and when" basis. The British, however, want firm orders.

Choicest plum of European steel industries is the directing post of Arbed, steel empire owned by native Luxemburgers plus Belgian and French banks. Aloyse Meyer, former general manager, whom American officials in Germany have accused of being an arch-collaborationist has been elevated from that post to the Arbed board of directors and elected board chairman. The gesture is interpreted by European sources as one of defiance hurled at Americans who, according to Arbed, are attempting to run down the value of the Luxemburg combine in order to buy it.

• **STEEL WAGES**—According to estimated figures for the entire industry the American Iron & Steel Institute says that combined wages and salaries for the first 3 months of this year were approximately \$445,820,000, compared to \$308,646,000 paid in the corresponding 1946 months. Total employees in the industry during March increased to 608,800 workers, of whom 519,100 were wage earners. In February 1947, employment was 606,700 workers, of whom 517,500 were wage earners. All employees in the iron and steel industry proper received an estimated \$150,560,000 in wages and salaries during March, compared with \$138,756,100 in March 1946. Of these payments, wages represented \$120,737,000 and \$110,197,800 respectively. During March, average hourly earnings of the industry's hourly, piecework and tonnage workers increased slightly to \$1.379, almost equaling the January record of \$1.381. Average hours worked by the industry's wage earners during March totaled 38.2 per week, slightly below the 39.0 February average.

• **CONSUMER CREDIT**—Consumer credit jumped \$330 million during March, according to the Federal Reserve Board. This interrupted a 2-month seasonal decline and sent consumer credit as of Apr. 1 to \$10,047,000,000 almost equal with the high record established just prior to Pearl Harbor. During the past 12 months a \$3,059,000,000 expansion in credit for consumer goods has taken place.

• **STEEL PRODUCTION**—Production of steel in the first 4 months of 1947 totaled 27,991,561 net tons, compared with 17,631,866 net tons for the same months of 1946, according to American Iron & Steel Institute. Production of steel ingots and steel for castings declined moderately in April to 7,048,767 compared to 7,307,486 net tons in March. The average operating rate during April was 93.9 pct of capacity, against 94.3 pct in March and 77.5 pct in April 1946.

• **TORPEDO STOCK**—On May 6 four million shares of Class A Tucker Corporation stock was registered in Philadelphia. One million dollars of Class B was included but public sale is restricted to Class A which will appear at \$5 a share. The effective date of the issue, handled through Floyd D. Cerf, Chicago, has not yet been determined.

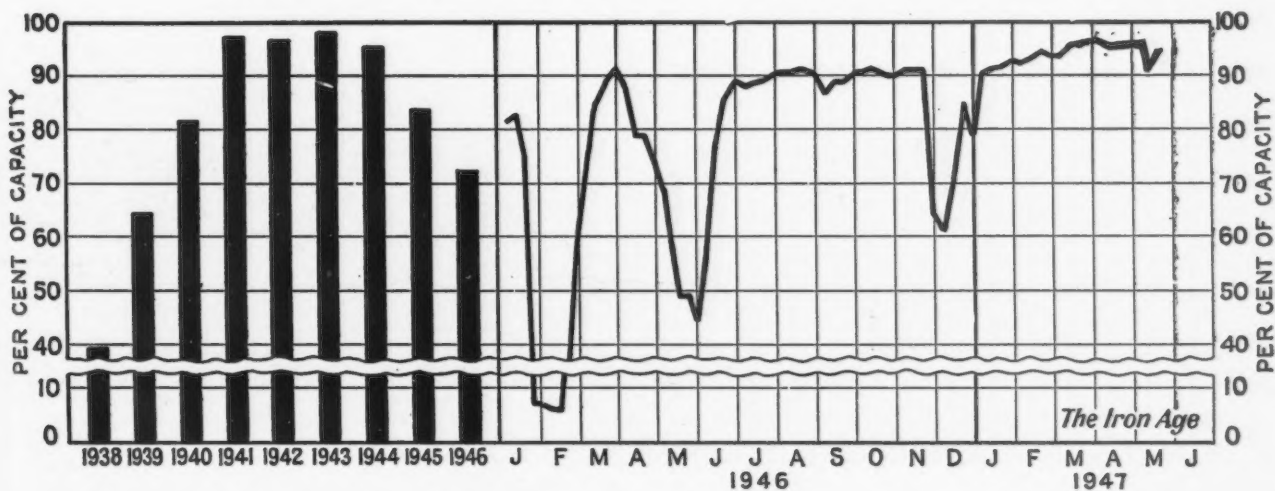
• **CONSTRUCTION MACHINERY PRICES**—Bureau of Labor Statistics show that prices of construction machinery advanced an average of 3 pct during the first quarter of 1947. This compares with 1 pct for the similar quarter last year and brings the total increase to 30 pct above 1939 levels. Greatest advances took place in drilling and boring machinery and equipment (7.2 pct) and mixers, pavers, spreaders and related equipment (5.8 pct). A rise of 3 to 4 pct was noted in material processing equipment, power cranes, scrapers, graders, and similar machinery.

• **WEEKLY EARNINGS**—Average weekly earnings of workers in manufacturing industries have now reached the same level in most cases as the January 1945 wartime peak while the work-week has been shortened by an average 5 hr. Average weekly wages for all manufacturing workers at the end of the first quarter of 1947, according to BLS indexes, stood at \$47.47 and the work-week was 40.4 hr, a reduction of a half hour over last December. Automobile manufacturing continued to pay highest wages with the average at \$54.33 for a work-week of 38.8 hr; wages in the iron and steel industries stood at \$50.31 for an average week of 40 hr. Blast furnace and rolling mill workers continued the highest paid in the steel industry with an average hourly rate of \$1.32 as compared with \$1.40 in the automotive industry. Nonferrous metals workers received \$1.22 per hr for a 41-hr week.

• **ITALIAN STEEL OUTPUT**—February production was reduced to 95,700 tons, compared with 99,000 tons in January. The postwar peak month was October 1946, when 150,000 tons were produced. Part of the variation is due to seasonal fluctuation attributable to the dependence of Italian production on hydroelectric power. Production in February 1946 totaled 60,500 tons.

• **BRITISH STEEL PRICES**—The British Minister of Supply has announced maximum price increases on certain iron and steel products, including foundry and forge pig iron in certain areas and refined iron. Some increases of size extras for small sections were also disclosed, plus increases on some other products.

Steel Ingot Production by Districts and Per Cent of Capacity



| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | Cleveland | Buffalo | Wheeling | South | Detroit | West | Ohio River | St. Louis | East | Aggregate |
|---------|------------|---------|------------|--------------|-----------|---------|----------|-------|---------|-------|------------|-----------|------|-----------|
| May 8 | 102.0 | 80.0* | 92.0 | 90.5 | 97.0 | 102.0 | 90.0 | 99.0 | 102.5 | 97.0 | 98.0 | 70.0 | 95.0 | 91.0 |
| May 13 | 102.0 | 90.5 | 92.0 | 90.5 | 97.5 | 100.0 | 100.0 | 99.0 | 102.5 | 105.0 | 103.0 | 68.5 | 95.0 | 94.5 |

* Revised.



More than a mere Manufacturing Lathe

If you're searching for ways to make your production dollar go farther, we believe you'll be particularly interested in this Monarch 10" Precision Manufacturing Lathe. Why? Because you'll get plus values on your investment, through the versatility of the machine—values that make Monarch the outstanding buy in its class.

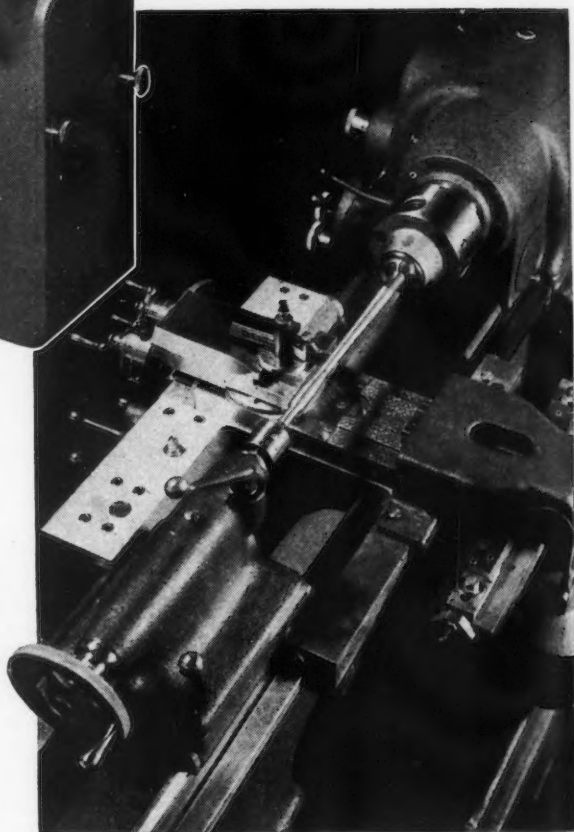
In addition to its ability to deliver rapid production of small diameter work—and spindle speeds up to 5000 rpm permit utilization of carbide-tipped tools for maximum production—it is equally suited to a wide variety of more specialized jobs, of which the metering pin illustrated is just one example. Here a bed-type forming attachment increases the range of jobs this standard 10" Precision Manufacturing Lathe can handle—*profitably*.

For metal-turning capacity *plus*, it will pay you to investigate Monarch Lathes. We're anxious to give you more complete details, interpreted in terms of your specific needs. May we hear from you?



THE MONARCH MACHINE TOOL CO., Sidney, Ohio

FOR A GOOD TURN FASTER — TURN TO MONARCH



Turning metering pins on a standard Monarch 10" Precision Manufacturing Lathe equipped with one of numerous available standard accessories, a bed-type forming attachment. Actuated by a hardened and ground template, the tool forms a surface which blends from a straight section at the tailstock end, into a radius, then into another straight section which blends into a decreasing taper and, finally, into an increasing taper.

Inventor's Council Asks Cooperation on Military Technical Needs

Washington

• • • Despite the tremendous war-time scientific advances the military services are still troubled by many technical problems on which they are soliciting the aid of inventors, research laboratories and industry. The National Inventors' Council, in cooperation with the Army, Navy and Coast Guard, last week made available the first of a series of the problems awaiting solution.

Twenty-five in number, the problems listed included the development of the following items: Light-weight high strength, non-corrosive structural metals; plastics suitable for use as structural material and other special applications; storage batteries for low temperature operation; low horsepower gas turbines; fuels and lubricants and additives for use in extreme climates; materials capable of standing up under extremely low temperatures, and a light-weight high-speed diesel engine.

In making this plea to the brainpower of the nation, Charles F. Kettering, chairman of the National Inventors' Council, asked that anyone having a solution or approach to a solution of any of the problems forward his idea to the Council, at the Dept. of Commerce. Such communications will be studied by the Council and the operating staff at the Office of Technical Services, Dept. of Commerce, and those deemed worthy will be recommended to the proper branch of the armed forces.

A brief summary of the scope, military application and status of some of the problems follows:

Light-weight high strength, non-corrosive structural metals—Such alloys with low inflammability characteristics are required as substitutes for all Engineer equipment now made of heavier metals, such as engine-generator sets, air compressors, pontoons, boats, and bridge structural members. The requirement is for lighter and stronger equipment to facilitate airborne transport, and ease and speed of handling on the ground. Dump trucks and earth moving

C. F. Kettering Lists 25 Projects Which Armed Forces Want Invented or Improved

• • •

equipment fabricated from light metal alloys, for example, would result in heavier pay loads with better handling on soft terrain.

As to the status of this problem, investigation of light alloys is continuing at the Engineer Board. A complete survey of educational institutions, manufacturers, and various branches of the armed services has been made in regard to their interest and work on the production of high strength mag-

nesium alloys. The substitution of extruded sections and castings for heavier metals has been accomplished with good results in many instances. New alloys and fabrication methods are sought.

Plastics suitable for use as structural material and special applications—The search is for plastics which may be used in the fabrication of military bridge structural members; airplane landing mats; boats; pneumatic floats, inflated equipment; collapsible water tanks; coatings for metals subject to corrosion, and a transparent window glass substitute that will not become brittle after repeated folding.

Current research and development includes the fabrication and

Subjects for Review



testing of plastic landing mats. A recently developed glass fiber plastic known as "Cyclone mat construction" is now being studied. Comparative data is being obtained from manufacturers who have indicated interest in the development and application of plastics to storm boats.

Action of materials in low temperatures — Military observers of recent arctic maneuvers have reported that practically all known materials change their physical characteristics at temperatures of -25°F and below. This is particularly true when this low temperature is accompanied by a high wind. It has been noted that steel and aluminum are not greatly affected as to tensile strength but do become very prone to fracture under such conditions. Research is needed to arrive at an alloy or treatment which would counteract the abnormal change in the physical characteristics of materials used in the construction of transportation equipment.

Storage batteries for low temperature operation — The military need is for storage batteries capable of operation in temperatures as low as -50°F with an efficiency sufficient to supply power for the normal operation of all military equipment from the smallest demand of portable infrared equipment to the heaviest drain of the largest engine self starter. Desirable characteristics include long life; durability; light weight; nonspilling, and capable of being quickly recharged without damage to the plates.

The Edison type battery due to its high cost, greater weight and lower voltage per cell is said to be less satisfactory than the conventional lead sulfuric acid type

for military use. The characteristics of the lead acid battery found unsatisfactory for cold weather operations include: Ampere capacity decreases as the temperature drops and maintenance of high charge is required to prevent freezing of the electrolyte.

A new type electric storage battery or improvements in the lead-acid storage battery is required for efficient service under any climatic conditions within a temperature range of 130° to -65°F . It is important that under normal operating requirements the battery will not reflect an appreciable reduction in voltage and efficiency due to low temperatures.

Low horsepower gas turbines — The requirements are for lightweight, variable speed gas turbines of approximately 0.8 lb per bhp with a fuel consumption of less than 1 lb per bhp and capable of utilizing low grade fuels. Various sizes up to 200 hp are required. Immediate applications include use for operating water and petroleum pumps and electric power generators.

A long-life gas turbine for continuous duty operation at approximately 700 hp is also desired. These turbines should be designed so as to operate efficiently on low grade fuels. They are intended primarily as the main power plant for railway locomotives utilizing an electric transmission or, if feasible, mechanical hydraulic or other type transmission. The maximum permissible weight of the turbine generator should be approximately 13,000 lb. The overall operation of the satisfactory gas turbine should be comparable to that of a good diesel engine of the same hp rating.

Ultra light-weight gasoline power

units — Engines of this type with ratings as low as one and up to five hp and capable of continuous operation with a minimum of maintenance are required. Exceedingly low weight with high efficiency, long life and capable of continuous operation in extreme temperatures are the ideal characteristics being sought. Special applications include engine generator units for supplying power as low as 150 watts to be carried by personnel. All engines should operate with the least possible amount of noise and vibration. At present, tests are being conducted on several nonstandard engines. Entirely suitable models have not as yet been developed.

Corrosion and deterioration — The solution of the problem of fungi and corrosion prevention on all types of material, particularly electrical equipment, is of vital importance.

Standby heaters — Under arctic temperatures of -65°F heaters of both the hot air and engine coolant type are a critical need. The satisfactory heater would be one which would burn diesel engine fuel oil, start readily and operate satisfactorily in a minimum temperature of -65°F and in winds of 50 mph. These heaters would be used in diesel electric locomotives and diesel drive prime movers such as tanks and tractors.

Transmissions — In order to obtain a smoothness in operation and infinite variable speed control a new power transmission is required. Such a transmission should have the advantage of simplicity, ease of operation, and high availability which at present is obtained from the electric current. However, it is desired to overcome such disadvantages as complexity of design and susceptibility to serious damage when overloaded or stalled. The transmission should be suitable for railway equipment including locomotive service with hp ratings up to 700 and 1300.

Light-weight high-speed diesel engine — There is a need in the Coast Guard for a light-weight diesel engine developing approximately 8 to 10 bhp at 3000 rpm weighing not over 15 lb per bhp to replace the gasoline engine of portable emergency fire pumps. Fuel consumption should be not more than 5 lb per brake hp-hr. The industrial field has been can-

MILL DEPOT: Bethlehem Steel Co. opened this new mill depot this month at its Bethlehem plant. It is a first rate warehouse to serve distributors, jobbers and mill customers with tool and special steels.



vassed, but to date no manufacturer is known to have developed such an engine.

Scale-free salt water evaporators—The problem involves the investigation of the possibility of a scale-free and more efficient evaporator which would not require the use of detergents and to evaluate data which would permit the design of such a unit.

This item is needed for ships' service distillation of boiler and drinking water. Existing evaporators suffer a reduction in capacity output as a result of the deposition of salt, scale, corrosion of metal and other causes. Consequently, frequent descaling causing plant shutdown or use of detergents is necessary to obtain optimum performance. To compensate for the foregoing, larger than necessary distilling units are required, occupying much needed space and resulting in lower efficiency.

New types of fuels and lubricants and additives—Fuels and lubricants which will allow normal starting and dependable operation of engines in extremely hot and extremely cold climates are the outstanding requirements.

Several types of fuel, lubricants and additives are being tested in the temperature test laboratory at the Engineer Board and in the Arctic regions without entirely satisfactory results.

Information compiled from recent Arctic and cold weather maneuvers indicates that considerable work is desirable in the lubricant and fuel oil field. A fuel oil that will not separate or disassociate under low temperatures or become solidified as is the tendency with present diesel fuel oil is desired. An ideal diesel fuel oil would be one that would not appreciably lose its physical and chemical characteristics at -65°F . There is need for lubricating oil which would maintain satisfactory viscosity and have a pour point of approximately -60°F . In the field of solid lubricants development is required to produce a lubricant which will not solidify at -65°F . Consideration might also be given to the solidification of gasoline in order to improve the packaging, transportation and storage under minimum temperatures of -65°F . It is necessary that the jelled gasoline be satisfactory for reconver-

sion by application of unjelling catalysts at a temperature range of 0° to 32°F .

The remaining problems cover the following topics: Solidification of soils to support the emergency operations of aircraft or military vehicles; development of rectifier tubes in the range of 8000 to 40,000 v; dry development of photo-

graphic film; draft gauges for marine vessels; roll indicators; gliderborne lifeboat; whistles for diesel propelled vessels; line throwing gun; fog detector; electronic device for "lighting-off" burners; miniature radio transmitter; continuous sampling combustible gas indicator, and land-going lifeboat.

WAA Ready to Donate Surplus Machine Tools To Government Agencies

Washington

••• WAA has instituted a program to donate enormous quantities of surplus machine tools to government institutions and non-profit organizations. This is the first time large scale donations of any kind will be made by WAA. It is also the first time that states and local governments will be the beneficiaries.

WAA Administrator, Robert M. Littlejohn, pointed out that the agency has the largest inventory of machine tools in history, approximately \$769 million worth on Mar. 31. These tools, he declared, constitute a national asset requiring consideration of national interest in any plan for disposal. A study of the machine tool problem, he said, indicates that warehousing costs represent one of the heaviest items in WAA's operating

budget and that it is more economical to donate machine tools than to winterize and keep them stored for another year.

Any machine tool will be made available for donation if it remains in inventory after being offered at a fixed price to priority claimants and commercial buyers. Eligible donees include agencies or institutions supported by the Federal government or by any state or local government and non-profit educational, health or charitable institutions. The fixed prices, covered in two volumes of a so-called price register, apply to tools which are in long supply.

Machine tools sold under the Clayton formula are those that are in short supply. If machine tools cannot be disposed of either at fixed prices or under the Clayton formula, they will be made available to donees. Should none of these want the tools, they will be offered at competitive bids. This means that they will go at what will be salvage or junk prices.

BOAT BUSINESS BOOMING: The Ohio River towboat "Victory" shown here pushing six bargeloads of coal is now sailing to the Argentine towing four new Dravo sand and gravel barges also sold to the South American republic. Dravo will also build two larger towboats for the Argentine Government. The company reports 10 river towboats now on order, largest backlog in the firm's history.



Raises Third Quarter Allocation of Tinplate For Shipment Abroad

Washington

••• Third quarter allocations of tinplate for shipment abroad aggregate 120,000 net tons, it has been announced by the Office of International Trade, Dept. of Commerce. This is a slight increase over second quarter allocations.

Of the total allocations, which will be granted "CXS" priority assistance, 41,943 tons will be shipped to Latin American countries. All other countries have been granted 78,000 tons. This leaves a small reserve for a contingency. On a percentage basis third quarter allocations for single countries are about the same as in the second quarter, OIT said. The quotas for Argentina, Brazil, Uruguay and Paraguay include the allocation established for the British meat pack as has been the previous practice.

Third quarter allocations by countries follow:

| Latin American Countries | Short Tons |
|---------------------------------|------------|
| Argentina | 14,300 |
| Bolivia | 300 |
| Brazil | 12,800 |
| Chile | 3,900 |
| Colombia | 700 |
| Costa Rica | ... |
| Cuba | 1,500 |
| Dominican Republic | 120 |
| Ecuador | 120 |
| Guatemala | 40 |
| Haiti | 70 |
| Honduras | 23 |
| Mexico | 4,100 |
| Nicaragua | 50 |
| Panama | 70 |
| Paraguay | 640 |
| Peru | 1,200 |
| El Salvador | 50 |
| Uruguay | 2,360 |
| Venezuela | 500 |
| Total | 41,943 |
| Non-Latin American Countries | Short Tons |
| Australia | 12,000 |
| New Zealand | 3,200 |
| South Africa | 8,000 |
| Middle East | 1,100 |
| Turkey | 1,000 |
| Philippines | 1,100 |
| French North Africa | 3,500 |
| France | 4,500 |
| China | 1,500 |
| Belgium | 6,000 |
| Denmark | 1,000 |
| Norway | 7,000 |
| Netherlands | 9,000 |
| Italy | 3,000 |
| Portugal | 1,500 |
| Spain | ... |
| Sweden | 3,500 |
| Switzerland | 3,600 |
| Finland | 350 |
| Madagascar | 550 |
| Eire | 400 |

| | |
|-----------------------------------|--------|
| Greece | 1,000 |
| New Foundland | 100 |
| India | ... |
| Malaya (Strait Settlements) | 700 |
| Indo-China (French) | 440 |
| New Caledonia | 50 |
| Iceland | 250 |
| French West Africa | 200 |
| Netherlands East Indies | 2,500 |
| Hong Kong | 200 |
| Portuguese East Africa | 55 |
| Portuguese West Africa | 100 |
| Belgian Congo | 200 |
| Tangier | ... |
| Martinique & Guadeloupe | 70 |
| Romania | 25 |
| Southern Rhodesia | 215 |
| Total | 78,000 |

To Try Again

New York

••• Captain A. H. Reid arrived here last week on a steel buying mission for the British Iron & Steel Federation. He will attempt to purchase up to a million and a quarter long tons, preferably semifinished steel. Sheets and light plates are also desperately needed. He has dollars authorized for purchase up to June 1948. Last October, Sir Andrew Rae Duncan, Federation head, came to this country on a similar mission but his efforts were fruitless.

Fairless to Review Corp. Plan to Move Tube Plant

Pittsburgh

••• Fighting for a reprieve of National Tube Co.'s decision to move out of Ellwood City, a "Save Ellwood City" citizens' group this past week met with Benjamin F. Fairless, U. S. Steel Corp. president, and got a promise that the contemplated action would be reviewed. The decision of National Tube Co. to withdraw its operations from Ellwood City, Pa., was announced in August, 1946, when Charles R. Cox, on his election to the presidency of Carnegie-Illinois Steel Corp., stated that the action would be spread over a 3-year period.

Since National Tube's decision first became known, the citizens of Ellwood City have been working constantly to attract new companies and new industries into the area. National Tube Co. has been the largest single employer in the area for many years, and the loss of that plant would mean unemployment for several thousand.

Spring Conference Of Iron & Steel Engineers To Be Held May 26, 27

Pittsburgh

••• More than 500 steel mill operators and executives are expected to attend the annual spring conference of the Assn. of Iron & Steel Engineers, to be held at the Benjamin Franklin Hotel in Philadelphia, May 26 and 27. The conference program will include morning and afternoon technical sessions on May 26, at which many papers of unusual interest will be presented.

The following papers will be presented: "Design, Construction and Lubrication of Mill Couplings and Spindles," by William L. Stover, Mesta Machine Co.; "The Art of Rolling Hexagons and Octagons," by Charles P. Hammond, Atlas Steels, Ltd.; "Bearing Construction and Performance Characteristics," by E. Crankshaw, Cleveland Graphite Bronze Co.; "Welding of Steel Strip for Continuous Cold Rolling," by Henry Griffith, Federal Machine & Welder Co.; "Remote Control of Continuous Slab Heating Furnaces," by C. E. Duffy, Bethlehem Steel Co.

Also "Rolling Practice on 44, 36 and 32-in. Mills," by R. F. Lavette, Republic Steel Corp.; "The Manufacture of Wrought Steel Wheels," by Robert Merk and William Ashton, Carnegie-Illinois Steel Corp.; "Production, Power Requirements and Design for Cold Draw Equipment," by Glenn W. Garwig and A. L. Thurman, Aetna-Standard Engineering Co.; "Problems of Mill Speed Ups," by F. Mohler, Patterson-Emerson-Comstock, Inc., and "Modern Ideas in Strip Electroplating," by H. P. Munger, Youngstown Sheet & Tube Co.

On Monday evening a dinner will be held in the ballroom at the Benjamin Franklin Hotel. Robert W. Wolcott, president of Lukens Steel Co., will be the guest speaker. A highlight of the spring conference will be an inspection trip through Lukens Steel Co. on May 27.

Expediting Group Criticizes Government Failure to Move Scrap

Washington

• • • Failure of government agencies to get scrap into domestic trade channels was sharply criticized at a meeting here on May 8 of the Steel, Foundry & Scrap Industries Committee for Expediting Iron & Steel Scrap.

Committee chairman Robert W. Wolcott issued a statement charging that the government has fallen down on the job of supplying scrap it had promised. Specifically, Mr. Wolcott expressed disappointment at what he said was WAA's failure to act more promptly in carrying out the program announced on Mar. 7 by John Steelman, Assistant to the President, but at that time director of Reconversion for the Federal Government. Mr. Steelman had promised, Mr. Wolcott said, that about 1,250,000 tons of wartime materiel, equipment and other scrap would be returned to the nation's stockpile during 1947 and that some 500,000 tons would be put into industrial channels "during the next 2 months."

Actually, it was stated, only trifling progress has been made by WAA in declaring obsolete tools and industrial equipment as scrap.

The Combined Committee's pessimistic outlook was seasoned with doubts that shipbreaking yards can continue operating through the summer. This belief was based on reports that some of the new yards are beginning to run out of work.

A splash of brighter color was added to the picture, however, by Mr. Wolcott who said that Congress is becoming aware of the problem. He praised transfer of responsibility for investigation of the disposal of surplus property to Senator Ferguson's Surplus Property Subcommittee of the Senate Committee Investigating the National Defense Program. Also, Mr. Wolcott said that statements introduced in the Congressional Record, expressing alarm over the failure of WAA to act more promptly in disposing of obsolete material, "afford additional encouraging proof that Congress wants something done about the scrap situation."

Wolcott Charges U.S. Agencies Have Failed to Live Up To Promises Made Mar. 7

• • •

The first move in Congress, though it involved no affirmative action, was taken by Rep. Harold C. Hagan, R., Minn., on May 7. He leveled a caustic attack at WAA, the Army and Navy for not bringing scrap from Europe and the Pacific where he said that there are still millions of tons.

It might be explained that WAA is responsible only for domestic scrap, including that in the United States territories and possessions such as Alaska and Hawaii. The Army and Navy are almost entirely responsible for disposition of overseas scrap, the Foreign Liquidation Commission having maintained a policy of staying out of the scrap business as such, disposing only of surplus property which has deteriorated to an unusable condition which it sells on a "where is, as is" basis and, of course, brings scrap prices.

Outside of 80,000 tons of unusable maritime property located at Manila, FLC says it now has no such surplus on hand in the Pacific areas.

With respect to WAA, it is contended that it lacks both an organization and a program for marketing scrap. Although WAA believes its offering of 80,000 machine tools will clear about 300,-

000 tons of scrap, the fact is said to be that under the procedure by which these tools are being offered they may land in the hands of speculators rather than scrap dealers.

Representative Hagan urged that the April 10 program of the Combined Committee be adopted in order to get both domestic and overseas scrap to foundries and steel mills in this country.

Briefly, the Combined Committee recommended that surplus equipment under control of WAA (domestic) and in occupied Germany and the Pacific be scrapped, and that all obsolete Navy and Maritime vessels be released immediately for scrapping. It estimated the potential scrap from these sources would aggregate many million tons.

Government sources claim they do not have any estimates. Maj. Gen. Frank A. Keating, deputy military governor for Germany, has informed L. D. Greene, a member of the Combined Committee, that the sale of civilian generated scrap in the American and British Zones is under consideration but added that it will be some time before quantities available for export can be determined. If made available, this scrap will be sold by the Joint Export - Import Agency, Minden, Westphalia.

The Navy's impending scrap survey trip through the Western Pacific, warmly endorsed by the committee, is expected to give a clearer picture than is now seen of the tonnage potentialities.

WINDMILLS, INC.: Ready for fly-away delivery to the Army and Navy are 13 military helicopters lined up at their birthplace, Bell Aircraft in Buffalo. This is believed to be the largest single delivery of helicopters at any one time.



More Steel Companies Report Good Earnings For First '47 Quarter

Youngstown

• • • On capacity operations during the first quarter, Youngstown Sheet & Tube Co. has reported a profit of \$7,335,749, which compares with \$1,205,444 for the first quarter of 1946. The company deducted \$1,571,590 from the first quarter last year, however, as expenses of a strike which closed plants from Jan. 21 through Feb. 17.

Net sales and other first quarter revenues amounted to \$72,035,331.

Sharon, Pa.

• • • Sharon Steel Corp. showed a net profit of \$1,886,918 for the first quarter of this year on sales of \$20,675,079.

Birmingham

• • • Sloss-Sheffield Steel & Iron Co., for the first quarter of 1947 earned \$439,100.51 net after estimated Federal income taxes and subject to annual audit and year end adjustments. Net income for

the first quarter of 1946 was \$50,838.54.

Cleveland

• • • Midland Steel Products Co., has announced a net profit of \$537,792 for the first quarter of 1947, after all charges and an estimated provision for federal income tax of \$329,500, according to E. J. Kulas, president.

New York

• • • Crucible Steel Co. of America earned \$891,810 in the first quarter of 1947. In the first quarter of 1946 the company reported a loss of \$1,742,750.

Affirms ICC Freight Case

Washington

• • • The Supreme Court on May 12 affirmed the ICC interim 1945 report in the celebrated inter-territorial freight rate case. Sparked by southern interests, the ICC report ordered a general reduction of 10 pct in class rates in the South and West and an increase of 10 pct in official terri-

tory class rates, pending the development of new uniform class rates.

Commerce Official Says Steel Study Is Only Facts

Washington

• • • H. B. McCoy, Director of the Office of Domestic Commerce, Dept. of Commerce, told THE IRON AGE that parts of its voluminous study on steel are now in the hands of the industry for comment and suggestions. He denied reports that the study makes any recommendations.

He said that the report is proposed only as a basic reference book on what has happened in the past and that the information has been gathered from government publications, the industry and other sources. It does not attempt to project future needs, makes no suggestions to labor as to wage demands, nor to users regarding the price trend or to producers with respect to future steel requirements, Mr. McCoy said.

When completed the report, it is said, will contain about 400 pages.

Canadian Steel Output Sets Record in March

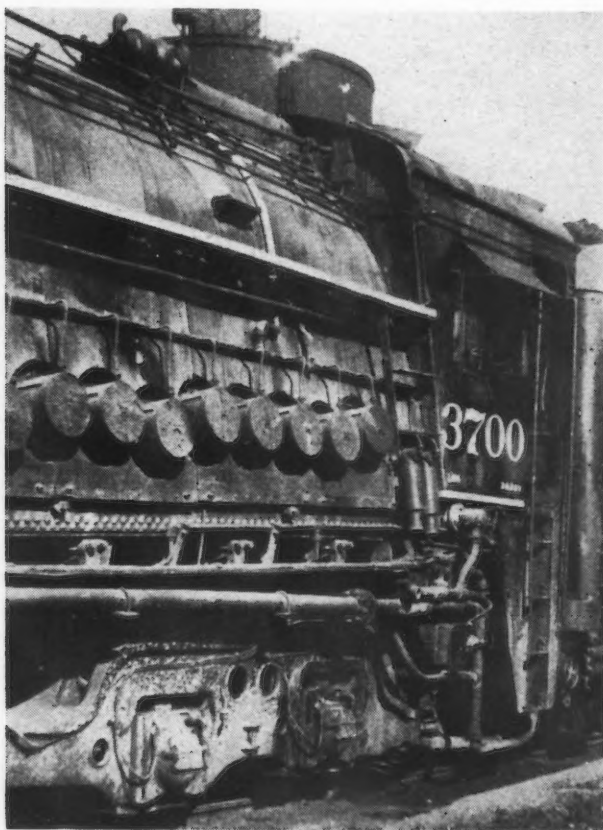
Toronto

• • • Canadian production of steel ingots and castings in March reached the highest total since April 1945. For March output totaled 269,732 net tons or 89.5 pct of total rated capacity and compares with 229,222 tons or 84.2 pct for February and 249,117 tons or 82.7 pct for March 1946. Production for the month included 263,193 tons of steel ingots and 6539 tons of castings. Charges to steel furnaces were 144,231 tons of pig iron; 78,377 tons of scrap of consumers' own make and 68,266 tons of purchased scrap.

For the first 3 months of this year, cumulative output of steel ingots and castings totaled 748,752 net tons, as against 727,633 tons in the 1946 period and 796,647 tons in 1945.

Following are comparative monthly totals for 1947 in net tons:

| | Steel Ingots | Castings |
|-------------------|--------------|----------|
| January | 243,557 | 6,241 |
| February | 223,124 | 6,098 |
| March | 263,193 | 6,539 |
| Total 3 Mos. | 729,874 | 18,878 |



SHOT IN THE SIDE: Not to be outdone by steel mill use of oxygen to enrich openhearth and blast furnace fuel, at least one railroad is burning it on the open road. This Denver & Rio Grande Western locomotive performs more efficiently at high altitudes when oxygen is fed to its firebox through the side air intakes shown on the side of the firebox.

Issues Invitations To Join Advisory Groups Of Army-Navy Board

Washington

••• Wheels have been set in motion for the organization of three additional industrial advisory groups to assist the Army-Navy Munitions Board in mobilization planning. The Board has issued invitations to prominent figures in the iron and steel as well as the nonmetallic minerals industries to become members of the advisory committees.

This brings to six the total of the advisory groups now being formed, invitations having already been extended to members of the aluminum and magnesium, copper and copper base alloys, and nonferrous metals industries. The total number of such committees may eventually amount to a score or more; the early groups will be concerned chiefly with problems of stockpiling.

They will study the current situation and advise the Board as to what degree a material such as tin or lead is critical, its availability and best resources, and methods of acquisition.

The iron and steel committee will likely be assigned to the Materials Div. and will be concerned chiefly with raw materials and processed items up to the end product stage. For instance, they will advise on all stages of metal production from mining through the processing operations.

When the iron and steel reaches the cast, forged or other rough-finished stage, it then becomes the problem of the Products Div. and its advisory committees. It will be the job of the latter when organized to plan for the supply and use of the end products or their component parts.

Invitations to become advisers have been sent to:

Iron and Steel Industry Advisory Committee. George W. Cannon, president, Campbell, Wyant & Cannon Foundry Co.; Joel Claster, Luria Bros. & Co., Inc.; W. F. Detwiler, chairman, Allegheny Ludlum Steel Corp.; B. F. Fairless, president, U. S. Steel Corp.; John E. Galvin, president, Ohio Steel Foundry; E. G. Grace, president, Bethlehem Steel Co.; Charles R. Hook, president, The American Rolling Mill Co.; Walter R. Howell, president, Bliss & Laughlin Inc.; Elton Hoyt II, Pickands, Mather & Co.

Also Henry J. Kaiser, Henry J. Kaiser Co.; H. Edgar Lewis, Jones & Laughlin Steel Corp.; Hugh Morrow, president, Sloss-Sheffield Steel & Iron Co.; Hayward Niedringhaus, president, Granite City Steel Co.; Frank Purnell, president,

Youngstown Sheet & Tube Co.; Henry A. Roemer, chairman, Sharon Steel Corp.; E. L. Ryerson, chairman, Inland Steel Co.; General Brehon Somervell, president, Koppers Co., Inc.; Walter S. Tower, president, American Iron & Steel Institute; Ernest T. Weir, chairman, National Steel Corp.; C. M. White, president, Republic Steel Corp.; and Robert V. Wolcott, president, Lukens Steel Co.

Non-Metallic Minerals. V. D. Barker, Western Electric Co.; Malcolm H. Barnes, Linde Air Products Co.; J. M. Blaney, Rosiclare Lead & Fluorspar Mining Co.; H. K. Collins, General Electric Co.; E. S. Crosby, president, Johns-Manville International Corp.; Robert E. Cryor, general manager, Union Asbestos & Rubber Co.; V. G. Dodds, president, Sierra Talc Co.; L. M. Fuller, president, American Abrasive Co.; I. Henry Hirsch, premier, Crystal Laboratories, Inc.; S. W. Hofman, Diamond Distributors Sales Co., Inc.; Paul J. Kreusi, president, American Lava Corp.

Also Charles R. Lindsay, president, Lindsay Light & Chemical Co.; J. P. Luckey, vice-president, Hamilton Watch Co.; Sidney Montague, Asheville Mica Co.; W. LaCoste Nelson, Norton Co.; Charles Pettinos, Charles Pettinos-Products of Graphite; Andrew Phelps, vice-president, Westinghouse Electric & Mfg. Co.; J. H. Schermerhorn, president, Joseph Dixon Crucible Co.; C. R. Taylor, president, The Charles Taylor Sons Co.; Frank Watts, Gillespie-Rogers-Pyatt Co., Inc.; and D. E. Worley, John Worley Co.

Ferrous and Nonferrous Additive Alloys. Quincy Bent, vice-president, Bethlehem Steel Co.; E. D. Bransome, Vanadium Corp. of America; R. E. Dwyer, Anaconda Copper Mining Co.; C. R. Hook, president, Rustless Iron & Steel Co.; Paul Kreusi, president, International Nickel Co.; L. G. Pritz, president, Ohio Ferro-Alloy Corp.; James H. Rafferty, vice-president, Union Carbide & Carbon Corp.; Winthrop Sargent, president, Titanium Alloy Mfg. Co.; Charles H. Segerstrom, Jr., Nevada-Massachusetts Co.; Francis M. Sherwin, Brush Beryllium Co.; Arthur D. Storke, president, Climax Molybdenum Co.; and E. M. Wanamaker, president, Electro Manganese Corp.

Representatives of industry who have previously been tendered invitations to become advisers to the Board and their committee designations are as follows:

Aluminum and Magnesium. I. W. Wilson, Aluminum Co. of America; Irving T. Bennett, vice-president, Revere Copper & Brass, Inc.; R. S. Reynolds, Jr., Reynolds Metals Co.; D. A. Rhoades, vice-president, The Permanente Metals Corp.;

Wiser Brown, vice-president, American Magnesium Corp.; Leo B. Grant, sales manager, Magnesium Div.; The Dow Chemical Co.; C. J. Amick, Century Metalcraft Corp.; L. M. Brile, Fairmont Aluminum Co.; P. A. Dulin, Jr., president, Dulin Bauxite Co., Inc.

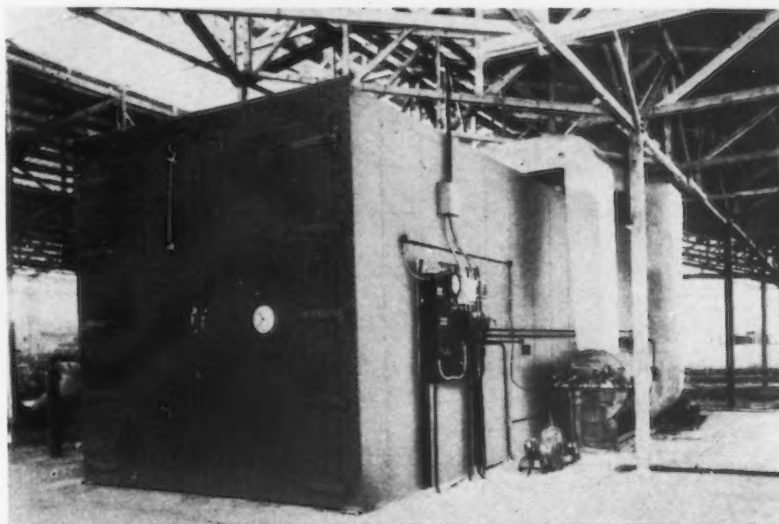
O. L. Earl, Acme Aluminum Foundry Co., Inc.; J. G. G. Frost, Aluminum & Magnesium Inc.; J. G. Landrigan, United Wire & Supply Corp.; G. W. Motherwell, vice-president, Wyman-Gordon Products Corp.; Charles Pack, vice-president Doehler Jarvis Corp.; R. J. Roshirt, Bohn Aluminum & Magnesium Corp.; W. A. Singer, Apex Smelting Co.; Ralph L. Wilcox, Gerrity Michigan Die-Casting Co.; George N. Wright, The John Harsch Bronze & Foundry Co.

Copper and Copper Base Alloys. R. E. Dwyer, Anaconda Copper Mining Co.; Russell J. Parker, assistant to president, Kennecott Copper Corp.; Leo Halpern, assistant to president, American Smelting & Refining Co.; K. C. Brownell, vice-president, American Smelting & Refining Co.; J. S. Cates, president, Phelps Dodge Refining Corp.; M. W. Acker, Olin Industries, Inc.; Alfred Bellis, John A. Roebling Sons Co.; W. J. Bullock, president, W. J. Bullock, Inc.; B. J. Flaherty, Johnson Bronze Corp.; J. H. Goss, president, Scoville Mfg. Co.; Benjamin Harris, president, Benjamin Harris & Co.; E. R. Lovell, Calumet & Hecla Consolidated Copper Co.; A. J. McNabb, Magna Copper Co.; W. W. Rarity, National Brass Works; H. W. Steinkraus, president, Bridgeport Brass Co.; D. N. Zimmer, American Metal Co.

Nonferrous Metals. O. W. Bilharx, Bilharx Mining Co.; J. M. Bowlby, president, Eagle-Fischer Mining & Smelting Co.; G. H. Chambers, vice-president, Foot Mineral Co., Inc.; Sidney Cohn, Sigmund Cohn & Co.; Robert E. Dwyer, executive vice-president, Anaconda Copper Mining Co.; Benna Elkan, National Zinc Co.; Andrew Fletcher, president, St. Joseph Lead Co.; Leo Halpern, assistant to president, American Smelting & Refining Co.; Marshall L. Havey, executive vice-president, New Jersey Zinc Co.

Also Carl A. Igenfritz, vice-president in charge of purchase, U. S. Steel Corp. of Delaware; J. H. McElhinney, vice-president in charge of operations, Wheeling Steel Corp.; Charles Pack, vice-president, Doehler Jarvis Corp.; N. W. Rice, president, U. S. Smelting Refining & Mining Co.; Fletcher W. Rockwell, president and chairman of board, National Lead Co.; Samuel H. Williston, vice-president, Cordero Mining Co.; Howard I. Young, president, American Zinc, Lead & Smelting Co.

BUSS BAKER: This 40-ft Despatch oven is installed in the land of the jumping bean, in Monterrey, where fully assembled transport busses are finish-baked in it. Each bus, complete except for tires and gasoline tank, is spray painted and then rolled into the gas fired oven for baking.



New Steel Co. of Wales Formed to Erect And Operate Strip Mills

London

••• The Steel Co. of Wales has now been registered with a capital of \$160 million and with borrowing powers of a similar amount. Mr. E. H. Lever, chairman and joint managing director of Richard Thomas and Baldwins, announced in February last (see THE IRON AGE, Feb. 27, p. 86) that the Steel Co. of Wales would have the responsibility of planning, erecting and managing the new hot strip and cold reduction plants to be erected, and of selling their products in British and world markets.

Mr. Lever has been appointed chairman of the new company, and the deputy-chairman is Sir Charles Bruce-Gardner, chairman of John Lysaght. The other directors are: J. H. Jolly, chairman, Guest Keen Baldwins; Sir Evan Williams, chairman, Llanelly Associated Tinplate Co.; W. F. Cartwright, director, Guest Keen Baldwins, and general manager, Margam and Port Talbot Works;

Leslie J. Davies, director, Richard Thomas and Baldwins, and general manager, Ebbw Vale Works; Capt. H. Leighton Davies, general manager, Richard Thomas and Baldwins; S. E. Graeff, technical adviser, Richard Thomas and Baldwins; R. A. Hacking, technical adviser, Richard Thomas and Baldwins.

Also T. O. Lewis, general man-

ager, Richard Thomas and Baldwins; E. C. Lysaght, managing director, John Lysaght; E. Julian Pode, managing director, Guest Keen Baldwins; H. F. Spencer, commercial manager, Richard Thomas and Baldwins; C. R. Wheeler, managing director, Guest Keen Baldwins. The secretary of the company is Mr. David J. Young.

Monsanto's Technical Staff Suffers Heavily

Texas City, Tex.

••• The technical staff of Monsanto Chemical Co.'s plant suffered a heavy proportion of casualties in the recent disaster. Those dead include: Charles Comstock, division's technical director; B. F. Merriam, chief plant engineer; R. E. Boudinot, production manager; R. D. Southerland, safety engineer, and F. A. Ruecker, chief power plant engineer. None of Mr. Ruecker's staff survived. Sixteen young chemists engaged in a special Monsanto training course who were super-

vising production in different departments perished. H. K. Eckert, plant manager, although in a critical condition, is expected to recover. Robert Morris, assistant plant manager, survived, although the plant jeep in which he was riding in his search for a tug to pull the burning French freighter into the bay, was hurled high in the air and overturned. In addition to the Monsanto employees' casualties, 123 employees of outside contractors who were engaged in construction at the plant are dead. Of the combined forces in the plant, the dead, missing and believed dead total 227—more than one-third of the people in the area affected by the blast.

Summary of United Kingdom Steel Statistics

Source: British Iron & Steel Federation

| All Figures Thousands of Net Tons | STEEL | | | PIG IRON | SCRAP | IRON ORE | |
|---|------------------------|------------------------|--------------------|-------------------|----------------------------|-----------------------------|--------------------|
| | Ingots and Castings | Finished Deliveries | Steel Stock (1) | Production (2) | Steelmaking Consumption | Imported Ore Consumption | Home Production |
| 1944 Total..... | 13599.0 | 11502.4 | 2431.5 | 7542.0 | 8252.6 | 2725.6 | 17332.2 |
| 1945 Total..... | 13237.8 | 9992.3 | 1885.9 | 7959.4 | 8065.9 | 4494.7 | 15870.4 |
| 1946 Total..... | 13958.0 | 11154.3 | 1332.4 | 8689.6 | 8562.6 | 6718.2 | 13661.2 |
| 1946 February..... | 1107.5 | 833.2 | 1341.5 | 654.5 | 657.2 | 445.5 | 1147.3 |
| March..... | 1145.5 | 898.6 | 1314.7 | 659.9 | 695.2 | 484.2 | 1148.6 |
| April..... | 1129.4 | 827.0 | 1265.1 | 666.1 | 682.7 | 499.0 | 1090.8 |
| May..... | 1466.0 | 1139.0 | 1283.6 | 846.7 | 890.9 | 644.5 | 1371.4 |
| June..... | 1074.3 | 859.2 | 1266.3 | 678.7 | 640.1 | 531.7 | 1010.2 |
| July..... | 1012.9 | 791.1 | 1299.8 | 658.5 | 616.0 | 534.9 | 986.9 |
| August..... | 1265.0 | 968.2 | 1342.7 | 813.6 | 755.4 | 665.8 | 1252.1 |
| September..... | 1068.4 | 930.4 | 1329.2 | 659.9 | 648.7 | 530.4 | 1027.2 |
| October..... | 1424.1 | 1170.9 | 1236.3 | 872.4 | 860.2 | 707.3 | 1289.1 |
| November..... | 1181.3 | 933.4 | 1196.7 | 689.4 | 716.8 | 570.3 | 993.2 |
| December..... | 1058.6 | 832.3 | 1170.7 | 686.3 | 644.6 | 563.1 | 970.8 |
| 1947 January..... | 1163.8 | 951.2 | 1195.6 | 728.4 | 701.3* | 618.3 | 1058.0 |
| February..... | 1000.7 | 769.2 | 1119.8 | 611.9 | 599.2 | 591.4 | 710.2 |

(1) Held by producers and in British Iron & Steel Corp. stockyards at the beginning of the years and months shown.

(2) All qualities, including ferroalloys.

* Revised.

Weekly Gallup Polls . . .

Voters Split on Two-Term Presidential Limitation

Princeton, N. J.

••• So far 16 states have voted on ratification of the proposed amendment to the U. S. Constitution providing a two-term limit on future presidents.

The proposed amendment, one of 140 bills which have in the past sought to limit the presidential terms in office, is the only one to pass both branches of Congress by the necessary two thirds majority and thus to be sent to the states for ratification.

Fourteen of the 16 states have ratified the amendment. Two have not.

The proposed amendment has solid backing from the American electorate, periodic polls of the nation have found, according to George Gallup, director, American Institute of Public Opinion.

The same polls have also found, however, that thinking on the issue consistently splits fairly sharply along party lines.

This split shows up again in the most recent test of sentiment among voters across the land—Republicans favor the two-term limitation, Democrats oppose it.

"Would you favor adding a law to the Constitution to prevent any president of the United States from serving more than two terms?"

The replies of those with opinions:

| REPUBLICANS | | |
|-------------|------|--|
| | Pct | |
| Yes | 79 | |
| No | 21 | |
| DEMOCRATS | | |
| | Pct. | |
| Yes | 43 | |
| No | 57 | |

This persistent split in thinking along party lines could have interesting implications.

Should sentiment in state legislatures crystallize along the same partisan lines as that found among the voters, the amendment might possibly be heading for ratification troubles.

There is of course no strong reason to believe that this will happen. In the National House of Representatives 47 Democratic votes were cast in favor of the amendment when it was passed by that body by a two thirds vote.

The fact is though, at least some Democratic-controlled state legislatures will have to ratify the amendment, if it is to become the twenty-second amendment.

This is because it takes 36 states—three fourths of the 48—to ratify before the proposed amendment becomes a part of the Constitution, and Republicans control both branches of the state legislature in only 25 states. Democrats control both branches in 17 states.

For whatever it is worth, the 14 states which have so far ratified have Republican-controlled legislatures. The two states which have not ratified—Oklahoma and Texas—have Democratic-controlled state legislatures.

The states which have so far ratified: Delaware, Illinois, Iowa, Kansas, Maine, Michigan, New Hampshire, Ohio, Oregon, New Jersey, California, Vermont, Wisconsin and Pennsylvania.

Here is the way the legislatures now line up politically in the 48 states:

Republicans control both houses in 25 states: California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Vermont, Wisconsin and Wyoming.

Democrats control both houses in 17 states: Alabama, Arizona, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.

In two states, Nevada and Rhode Island, Republicans control the Senate and Democrats control the House.

In one state, Utah, Republicans control the House and Democrats control the Senate.

In one state, Washington, Republicans control the House and the parties hold equal control of the Senate.

In two states, Minnesota and Nebraska, high executives (gov-

International Poll of Seven Nations Tells What Countries Are Considered Democracies

o o o

ernors, lieutenant-governors, attorney-general, etc.) are Republicans, but both legislatures are elected on a nonpartisan basis.

One other fact. Thirty-nine or so state legislatures have already adjourned, many of them not to meet again until after the 1948 elections may change political control of some of the legislatures and thus affect how they would vote on ratification.

President Roosevelt was the only president to break the two-term precedent established when George Washington declined a third term. Roosevelt, of course, ran and won not only a third term, but a fourth term.

The institute began testing on the issue in 1937 when it first appeared that Roosevelt might run for a third term.

The trend of thinking on the issue is shown below:

| Two-Term Limit | | Favor | Oppose |
|----------------|-------|-------|--------|
| | | Pct | Pct |
| 1937 | ..... | 49 | 51 |
| 1938 | ..... | 48 | 52 |
| 1939 | ..... | 42 | 58 |
| 1940 | ..... | 41 | 59 |
| 1943 (April) | ..... | 46 | 54 |
| 1943 (Dec.) | ..... | 54 | 46 |
| 1944 (April) | ..... | 57 | 43 |
| 1945 (May) | ..... | 60 | 40 |
| 1945 (July) | ..... | 58 | 42 |
| 1947 (Feb.) | ..... | 57 | 43 |
| Today | ..... | 59 | 41 |

••• Russia's attempt to appropriate the term "democracy" in describing her own government has not met with any noticeable degree of acceptance in other countries.

In the United States only one person in 20 thinks there is democracy in Russia. Fewer than one sixth in such countries as Norway, Sweden and Holland call Russia a democracy. In France, (CONTINUED ON PAGE 153)

Reveals Comparatively Small Price Increase In Industrial Equipment

Washington

••• In an economic brief issued by the Machinery & Allied Products Institute recently, government figures are used to show that industrial equipment price increases, 28 pct from 1939 to March 1947, have been comparatively small. Declaring that this is a "truly remarkable achievement" it is pointed out that by comparison, wholesale prices during the period covered were increased 94 pct for all commodities, 133 pct for raw materials

and 79 pct for manufactured products.

To further support the contention that the price increase in industrial equipment has been "of modest proportions," it is pointed out that up to the present, equipment producers have absorbed an increase of 70 pct in average hourly wage rates and 40-50 pct in the costs of purchased materials as compared with a much lower price increase. This was made possible, MAPI said, by the economies of volume production and a very substantial improvement as compared with prewar in the mechanical facilities of the industry:

Profits on sales also were declared to have aggregated only 5.9

pct in 1946, according to a National City Bank compilation covering 97 machinery manufacturers. This is compared with 11.2 pct in 1936; 9.1 pct in 1937; 9.8 pct in 1940 and 8.8 pct in 1941.

MAPI's brief was submitted as a pattern that fitted into efforts of the President and his advisers to persuade industry to slash prices. Moreover, performance of the industrial equipment industry was cited as evidence that it justified MAPI's statement before the House Banking and Currency Committee on Mar. 12, 1946, that there was nothing to justify the belief that removal of price control would result in an "unbridled upsurge in prices."

AMERICAN IRON AND STEEL INSTITUTE SHIPMENTS OF STEEL PRODUCTS ALL GRADES INCLUDING ALLOY AND STAINLESS (Net Tons)

MARCH - 1947
Month

| Steel Products | Number of Companies | Items | Current Month | | To Date This Year | | Whole Year 1946 | | 1947 | |
|---|---------------------|-------|--|-----------------------------|--|-----------------------------|--|-----------------------------|--|-----------------------------|
| | | | Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Remelt) | Per cent of Total Shipments | Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Remelt) | Per cent of Total Shipments | Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Remelt) | Per cent of Total Shipments | Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Remelt) | Per cent of Total Shipments |
| | | | (Net Tons) | (Net Tons) | (Net Tons) | (Net Tons) | (Net Tons) | (Net Tons) | (Net Tons) | (Net Tons) |
| Ingot, blooms, billets, tube rounds, sheet and tin bars, etc. | 40 | 1 | 216,755 | 4.1 | 201,383 | 4.2 | 524,637 | 4.0 | 1,645,748 | 4.0 |
| Structural shapes (heavy) | 13 | 2 | 389,713 | 7.3 | 234 | 7.2 | 979 | 7.1 | 5,399 | 7.1 |
| Steel piling | 3 | 3 | 26,343 | 0.5 | - | 0.5 | 23 | 0.4 | 141 | 0.4 |
| Plates (sheared and universal) | 29 | 4 | 526,581 | 9.9 | 14,651 | 9.6 | 57,703 | 8.5 | 250,709 | 8.5 |
| Skelp | 5 | 5 | 18,610 | 0.4 | 31,778 | 0.3 | 94,721 | 0.5 | 194,666 | 0.5 |
| Rails—Standard (over 60 lbs.) | 4 | 6 | 166,795 | 3.2 | - | 3.7 | 155 | 3.7 | 1,790,311 | 3.7 |
| —All other | 5 | 7 | 14,573 | 0.3 | - | 0.3 | 24 | 0.3 | 144,999 | 0.3 |
| Joint bars | 7 | 8 | 17,409 | 0.3 | 1,419 | 0.3 | 3,401 | 0.4 | 176,803 | 0.4 |
| Tie plates | 8 | 9 | 41,644 | 0.8 | 719 | 0.8 | 2,094 | 0.9 | 444,496 | 0.9 |
| Track spikes | 8 | 10 | 16,144 | 0.3 | 21 | 0.3 | 31 | 0.3 | 146,194 | 0.3 |
| Hot Rolled Bars—Carbon | 33 | 11 | 557,630 | 10.5 | 64,885 | 10.4 | 196,849 | 10.3 | 707,991 | 10.3 |
| —Reinforcing—New billet | 15 | 12 | 100,464 | 1.9 | 1,081 | 1.9 | 2,439 | 2.1 | 7,381 | 2.1 |
| —Reinforcing—New billet | 11 | 13 | 13,696 | 0.2 | - | 0.2 | - | 0.3 | 141,346 | 0.3 |
| —Alloy | 26 | 14 | 162,856 | 3.1 | 20,762 | 3.0 | 55,967 | 2.8 | 138,395 | 2.8 |
| —TOTAL | 44 | 15 | 834,646 | 15.7 | 86,728 | 15.5 | 255,255 | 15.5 | 758,966 | 15.5 |
| Cold Finished Bars—Carbon | 29 | 16 | 143,006 | 2.7 | 480 | 2.7 | 1,409 | 2.7 | 1,316,579 | 2.7 |
| —Alloy | 25 | 17 | 22,734 | 0.4 | 119 | 0.5 | 368 | 0.4 | 196,237 | 0.4 |
| —TOTAL | 35 | 18 | 165,740 | 3.1 | 599 | 3.2 | 1,777 | 3.1 | 1,512,816 | 3.1 |
| Tool steel bars | 19 | 19 | 8,448 | 0.2 | 434 | 0.2 | 1,180 | 0.2 | 96,020 | 0.2 |
| Pipe & Tubes—Butt weld | 15 | 20 | 129,002 | 2.4 | 5,359 | 2.5 | 15,146 | 2.6 | 1,276,289 | 2.6 |
| —Lap weld | 8 | 21 | 31,603 | 0.6 | 301 | 0.7 | 523 | 0.6 | 305,516 | 0.6 |
| —Electric weld | 11 | 22 | 88,532 | 1.7 | 1,126 | 1.5 | 2,968 | 1.4 | 674,459 | 1.4 |
| —Seamless | 11 | 23 | 187,413 | 3.5 | 15,531 | 3.4 | 38,139 | 3.8 | 1,071,540 | 3.8 |
| —Conduit | 6 | 24 | 9,910 | 0.2 | 896 | 0.2 | 2,140 | 0.2 | 98,521 | 0.2 |
| —Mechanical and pressure tubing | 12 | 25 | 55,599 | 1.0 | 1,796 | 1.0 | 4,554 | 0.9 | 429,180 | 0.9 |
| Wire rods | 21 | 26 | 51,268 | 1.0 | 16,237 | 1.0 | 50,944 | 1.4 | 679,998 | 1.4 |
| Wire—Drawn | 38 | 27 | 206,546 | 3.9 | 16,261 | 4.2 | 50,152 | 4.0 | 1,935,124 | 4.0 |
| —Nails and staples | 18 | 28 | 74,896 | 1.4 | 451 | 1.5 | 1,394 | 1.3 | 636,632 | 1.3 |
| —Barbed and twisted | 14 | 29 | 18,258 | 0.3 | 8 | 0.4 | 8 | 0.4 | 207,610 | 0.4 |
| —Woven wire fence | 13 | 30 | 34,351 | 0.7 | 261 | 0.7 | 927 | 0.8 | 383,230 | 0.8 |
| —Bale ties | 12 | 31 | 10,551 | 0.2 | - | 0.2 | - | 0.2 | 99,993 | 0.2 |
| Black Plate—Ordinary | 9 | 32 | 74,057 | 1.4 | 235 | 1.4 | 848 | 1.6 | 781,167 | 1.6 |
| —Chemically treated | 8 | 33 | 2,334 | - | - | 0.1 | - | 0.3 | 125,170 | 0.3 |
| Tin and Terne Plate—Hot dipped | 9 | 34 | 158,145 | 3.0 | 222 | 3.0 | 222 | 3.9 | 1,924,657 | 3.9 |
| —Electrolytic | 9 | 35 | 134,470 | 2.5 | 529 | 2.1 | 529 | 1.9 | 909,173 | 1.9 |
| Sheets—Hot rolled | 30 | 36 | 609,747 | 11.5 | 60,591 | 11.7 | 152,976 | 11.3 | 5,521,463 | 11.3 |
| —Cold rolled | 17 | 37 | 483,051 | 9.1 | 3,330 | 8.6 | 5,597 | 8.4 | 4,075,554 | 8.4 |
| —Galvanized | 16 | 38 | 136,300 | 2.6 | 20 | 2.6 | 64 | 3.0 | 1,462,053 | 3.0 |
| —Electrical and enameling | 10 | 39 | 45,741 | 0.9 | 58 | 0.9 | 305 | 0.9 | 435,170 | 0.9 |
| Strip—Hot rolled | 23 | 40 | 144,268 | 2.7 | 30,121 | 2.8 | 80,502 | 2.8 | 1,365,812 | 2.8 |
| —Cold rolled | 33 | 41 | 132,403 | 2.5 | 2,747 | 2.5 | 8,136 | 2.6 | 1,282,146 | 2.6 |
| Wheels (car, rolled steel) | 5 | 42 | 28,373 | 0.5 | - | 0.6 | - | 0.5 | 252,308 | 0.5 |
| Axles | 5 | 43 | 14,196 | 0.3 | - | 0.3 | 53 | 0.3 | 130,461 | 0.3 |
| All other | - | 44 | - | - | - | - | - | - | 6,266 | - |
| TOTAL STEEL PRODUCTS | 141 | 45 | 5,304,415 | 100.0 | 494,046 | 100.0 | 1,358,107 | 100.0 | 48,775,532 | 100.0 |

During 1946 the companies included above represented 99.3% of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

* Adjusted.

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1947
(Preliminary)

| Period | OPEN HEARTH | | BESSEMER | | ELECTRIC | | TOTAL | | Calculated weekly production, all companies (Net tons) | Number of weeks in month |
|--------------------|-------------|---------------------|-----------|---------------------|----------|---------------------|------------|---------------------|--|--------------------------|
| | Net tons | Percent of capacity | Net tons | Percent of capacity | Net tons | Percent of capacity | Net tons | Percent of capacity | | |
| January..... | 6,544,841 | 95.1 | 384,096 | 87.7 | *284,309 | *65.9 | *7,213,246 | 93.0 | *1,628,272 | 4.43 |
| February..... | 5,830,371 | 93.8 | *314,912 | 79.6 | 276,779 | 71.1 | *6,422,062 | 91.7 | *1,605,515 | 4.00 |
| * March..... | 6,614,369 | 96.1 | 378,893 | 86.5 | 314,224 | 72.9 | 7,307,486 | 94.3 | 1,649,545 | 4.43 |
| * 1st Quarter..... | 18,989,581 | 95.0 | 1,077,901 | 84.8 | 875,312 | 69.9 | 20,942,794 | 93.1 | 1,628,522 | 12.86 |
| † April..... | 6,361,987 | 95.4 | 375,744 | 88.6 | 311,036 | 74.5 | 7,048,767 | 93.9 | 1,643,069 | 4.43 |
| May..... | | | | | | | | | | 4.43 |
| June..... | | | | | | | | | | 4.29 |
| 2nd Quarter..... | | | | | | | | | | 13.01 |
| 1st 6 Months..... | | | | | | | | | | 25.87 |
| July..... | | | | | | | | | | 4.42 |
| August..... | | | | | | | | | | 4.43 |
| September..... | | | | | | | | | | 4.28 |
| 3rd Quarter..... | | | | | | | | | | 13.13 |
| 9 months..... | | | | | | | | | | 39.00 |
| October..... | | | | | | | | | | 4.43 |
| November..... | | | | | | | | | | 4.29 |
| December..... | | | | | | | | | | 4.42 |
| 4th Quarter..... | | | | | | | | | | 13.14 |
| 2nd 6 months..... | | | | | | | | | | 26.27 |
| Total..... | | | | | | | | | | 52.14 |

Note—The percentages of capacity operated are calculated on weekly capacities of 1,553,721 net tons open hearth, 98,849 net tons Bessemer and 97,358 net tons electric ingots and steel for castings, total 1,749,928 net tons; based on annual capacities as of January 1, 1947 as follows: Open hearth 81,010,990 net tons, Bessemer 5,154,000 net tons, Electric 5,076,240 net tons, total 91,241,230 net tons.

* Revised

† Preliminary figures, subject to revision.

YEAR 1946

| Period | OPEN HEARTH | | BESSEMER | | ELECTRIC | | TOTAL | | Calculated weekly production, all companies (Net tons) | Number of weeks in month |
|-------------------|-------------|---------------------|-----------|---------------------|-----------|---------------------|------------|---------------------|--|--------------------------|
| | Net tons | Percent of capacity | Net tons | Percent of capacity | Net tons | Percent of capacity | Net tons | Percent of capacity | | |
| January..... | 3,528,090 | 51.1 | 207,512 | 47.4 | 136,452 | 29.2 | 3,872,054 | 49.6 | 874,053 | 4.43 |
| February..... | 1,300,944 | 20.9 | 25,905 | 6.6 | 65,668 | 15.6 | 1,392,517 | 19.8 | 348,129 | 4.00 |
| March..... | 5,946,698 | 86.2 | 363,949 | 83.1 | 196,400 | 42.0 | 6,507,047 | 83.3 | 1,468,859 | 4.43 |
| 1st Quarter..... | 10,775,732 | 53.8 | 597,366 | 47.0 | 398,520 | 29.4 | 11,771,618 | 51.9 | 915,367 | 12.86 |
| April..... | 5,333,139 | 79.8 | 286,088 | 67.5 | 241,031 | 53.3 | 5,860,258 | 77.5 | 1,366,028 | 4.29 |
| May..... | 3,699,979 | 53.6 | 153,409 | 35.0 | 219,064 | 46.9 | 4,072,452 | 52.2 | 919,289 | 4.43 |
| June..... | 5,145,594 | 77.0 | 251,253 | 59.2 | 227,979 | 50.4 | 5,624,826 | 74.4 | 1,311,148 | 4.29 |
| 2nd Quarter..... | 14,178,712 | 69.9 | 690,750 | 53.7 | 688,074 | 50.1 | 15,557,536 | 67.9 | 1,195,814 | 13.01 |
| 1st 6 months..... | 24,954,444 | 61.9 | 1,288,116 | 50.4 | 1,086,594 | 39.8 | 27,329,154 | 59.9 | 1,056,403 | 25.87 |
| July..... | 6,023,799 | 87.5 | 365,332 | 83.6 | 228,083 | 48.9 | 6,617,214 | 84.9 | 1,497,107 | 4.42 |
| August..... | 6,287,617 | 91.1 | 373,837 | 85.4 | 261,755 | 56.0 | 6,923,209 | 88.7 | 1,562,801 | 4.43 |
| September..... | 5,947,688 | 89.2 | 371,465 | 87.8 | 235,054 | 52.1 | 6,554,207 | 86.9 | 1,531,357 | 4.28 |
| 3rd Quarter..... | 18,259,104 | 89.3 | 1,110,634 | 85.6 | 724,892 | 52.3 | 20,094,630 | 86.8 | 1,530,436 | 13.13 |
| 9 months..... | 43,213,548 | 71.1 | 2,398,750 | 62.2 | 1,811,486 | 44.0 | 47,423,784 | 69.0 | 1,215,994 | 39.00 |
| October..... | 6,308,845 | 91.4 | 387,933 | 88.6 | 253,562 | 54.3 | 6,950,340 | 89.0 | 1,568,926 | 4.43 |
| November..... | 5,869,767 | 87.8 | 318,350 | 75.1 | 268,655 | 59.4 | 6,456,772 | 85.4 | 1,505,075 | 4.29 |
| December..... | 5,283,651 | 76.7 | 222,704 | 51.0 | 253,353 | 54.3 | 5,759,708 | 73.9 | 1,303,101 | 4.42 |
| 4th Quarter..... | 17,462,263 | 85.3 | 928,987 | 71.5 | 775,570 | 56.0 | 19,166,820 | 82.8 | 1,458,662 | 13.14 |
| 2nd 6 months..... | 35,721,367 | 87.3 | 2,039,621 | 78.5 | 1,500,462 | 54.1 | 39,261,450 | 84.8 | 1,494,536 | 26.27 |
| Total..... | 60,675,811 | 74.7 | 3,327,737 | 64.6 | 2,587,056 | 47.0 | 66,590,604 | 72.5 | 1,277,150 | 52.14 |

Note—The percentages of capacity operated are calculated on weekly capacities of 1,558,041 net tons open hearth, 98,849 net tons Bessemer and 103,491 net tons electric ingots and steel for castings, total 1,762,381 net tons; based on annual capacities as of January 1, 1946 as follows: Open hearth 81,236,250 net tons, Bessemer 5,154,000 net tons, Electric 5,300,290 net tons, total 91,890,540 net tons.

Personals

(CONTINUED FROM PAGE 90)

• **George K. Dreher**, vice-president and general manager of the Rogers Pattern & Foundry Co., Los Angeles, has resigned.

• **Paul R. Fields** has been appointed purchasing agent at Dancy Machine Specialties, Inc., Chicago, and will be in charge of all purchasing and related matters. Mr. Fields was previously in the employ of the F. L. Jacobs Co. as assistant general manager, general manager, assistant to the vice-president in charge of manufacturing, and was in charge of purchasing.

• **John F. Marquitz** has been appointed assistant manager of the railroad division of Fairbanks, Morse & Co., Chicago, succeeding **John S. King**, who has been appointed manager of the Chicago branch. Mr. Marquitz' most recent assignment was that of manager of the company's Seattle branch house which position he filled for several years.

• **George A. Lubenow** has been appointed district sales representative for the Proctor Electric Co. and will make his headquarters in Milwaukee.

• **Raymond M. Cordon**, former sales engineer for the Clark Supply Co., has been appointed mid-west representative for pump sales of the Oberdorfer Foundries, Inc., Syracuse, N. Y.

• **Amos D. Moss**, director of purchases for the B. F. Goodrich Co. since 1920 and a member of the organization since 1899, will retire on July 1. He will be succeeded by **E. A. Stevens**, assistant to the director of purchases since 1942 and with the company since 1928.

• **W. W. Brown** has been placed in charge of the new cold drawn bar division, Youngstown Sheet & Tube Co. Mr. Brown will continue as manager of sales of hot rolled carbon bars and semi-finished products in the Youngstown, Ohio district. **W. J. MacKenzie** has been placed in charge of the newly established western carbon bar and semi-finished division of Youngstown Sheet & Tube. This division will cover the Indiana Harbor production of these items. Mr. MacKenzie will continue as manager of alloy sales. **L. V. Kuhnle** has been appointed manager of rod and wire sales and **H. H. Smith** has been appointed manager of high strength sales.

• **William F. Longfield** has joined Warren City Mfg. Co., Warren, Ohio, as chief sales engineer. Mr. Longfield was associated for the previous 35 years with the Cleveland Punch & Shear Works Co., the last 10 years of which he served as chief engineer.

• **A. J. Schaab** has been appointed acting assistant general freight agent for the Santa Fe Ry. System at Chicago. Mr. Schaab was first employed by the railroad as a yard clerk in the freight classification yards in 1919. In 1944 he was appointed chief clerk and became chief clerk to the traffic vice-president in 1945, which position he held prior to his recent appointment. **A. R. Kilian**, assistant chief clerk, freight traffic department, succeeds Mr. Schaab.

OBITUARY...

• **Charles A. Buck**, 73, president of the Fairfield Barrel Co., Fairfield, Ala., died Apr. 26 after a short illness.

• **Arthur J. O'Leary**, 49, manager, field sales for Lukens Steel Co., Coatesville, Pa., and its subsidiaries, By-Products Steel Corp. and Lukenweld, Inc., died May 6. He had been associated with Lukens Steel Co. since 1926.

• **Andrew Walters**, 51, foreman at the Rano St. plant of the American Radiator & Standard Sanitary Corp., in Buffalo, died Apr. 28.

• **Howard W. Phillips**, production superintendent of the Walworth Co.'s South Boston plant, died recently.

• **W. A. Dernbach**, 61, Chicago district manager of the Blaw-Knox Co.'s sprinkler division, died Apr. 28.

• **Earle G. Leonard**, 56, manager of the machine tool division of the Buffalo Forge Co., Buffalo, died May 3. He had been with the company since 1909, when he was employed as a clerk.

• **Einar Lindeblad**, president of Kloster Steel Corp., Chicago, died May 3.

• **Walter C. Trout**, president of the Lufkin Foundry & Machine Co., Lufkin, Tex., died Apr. 29.

Coming Events

May 20-21 International Acetylene Assn., annual convention, Cincinnati.

May 21-22 American Iron & Steel Institute, annual meeting, New York.

May 26-27 Assn. of Iron & Steel Engineers, annual spring conference, Philadelphia.

May 27 Metal Powder Assn., spring meeting, New York.

June 2-4 American Gear Manufacturers, Hot Springs, Va.

June 5-7 Electric Metal Makers Guild, Inc., annual meeting, Pittsburgh.

June 9-11 American Coke & Chemical Institute, annual meeting, French Lick, Ind.

June 15-19 American Society of Mechanical Engineers, semiannual meeting, Chicago.

June 16-20 American Society for Testing Materials, annual meeting, Atlantic City, N. J.

June 17-19 Machinery Dealers National Assn., convention, Cincinnati.

June 23-27 American Electroplaters Society, industrial finishing show, Detroit.

June 23-28 Railway Supply Manufacturers' Assn., Atlantic City, N. J.

July 14-18 American Society of Civil Engineers, Duluth, Minn.

Aug. 25-29 National Assn. of Power Engineers, Inc., Boston.

Sept. 8-12 Instrument Society of America, conference, Chicago.

Sept. 10-12 Porcelain Enamel Institute, Inc., Columbus, Ohio.

Sept. 17-26 National Machine Tool Builders' Assn., machine tool show, Chicago.

Sept. 29-Oct. 3 American Gas Assn., San Francisco.

The London **ECONOMIST**

The States and Labor

"I THINK this demonstration has been a great success," the leader of the Congress of Industrial Organizations told the press after thousands of union members from his own federation and from the rival American Federation of Labor met on the steps of the Capitol to protest against a bill sharply regulating labor unions.

But the demonstration had not been a success. The special trains and buses and worker's automobiles had poured in from 200 miles around in vain; heckling the Chief Executive had been in vain; packing the House galleries all day had been in vain. The next day the House of Representatives passed the bill in even sharper form than the Senate had, and the Senate concurred in the revisions the day after that. The Iowa Senate and House, these were.

The Federal Congress in Washington had been agonizing at great length over labor legislation and the prospects of another presidential veto. The House passed the Hartley Bill; the Senate is working on an alternative.

During all this, one state legislature after another has been passing its own restrictive labor laws. Forty-four of the 48 state legislatures meet in 1947; more than half have completed their work and gone home. Altogether 16 states have passed some kind of legislation directed against labor unions this year.

At least ten states have passed laws this term making it illegal to deny employment to anyone because he belongs or does not belong to a labor union—laws which overturn many established customs, many existing contracts, reopen many old sores.

The federal Hartley Bill bans only the "closed shop," "maintenance of union membership," and compulsory deduction of union dues from pay by the employer. Fourteen states now have such laws. Several are constitutional amendments, approved by popular vote.

Another state passed a law pro-

hibiting secondary boycotts by labor unions—as when union lorry drivers will not make deliveries at a place of business where there is a labor dispute, or working men in a processing plant will not work on materials from a nonunion producer.

Two states passed laws regulating labor disputes in public utility industries, and New York has prohibited strikes by public employees. Three states passed laws restricting picketing in labor disputes, in order to prevent picketing developing into great human walls around a closed plant, and to define intimidation by pickets more specifically than does the law of assault.

A great many other restrictive labor bills have been introduced into state legislatures, including each of the items in the omnibus federal Hartley Bill. Some legislatures are still sitting.

EXCEPT for New York, none of the 16 which has acted this year is a seaboard industrial state; only Indiana and Ohio out of the 16 are of the industrial Midwest. The South and the inland Trans-Mississippi West are the homes of this new wave of anti-unionism—the same largely rural states whose representatives in the Federal Congress favor restrictive labor laws there. Their home states do not have to reckon with a President who must hold the votes of industrial areas to win elections. Their governors are subject to the same influences that they are themselves.

The strength of labor unions in the United States resembles somewhat the strength of the Japanese armies in China during the war. The big cities and industrial areas they often control; the suburbs dislike them but tolerate them; the small towns and open countryside rarely see them, and dislike intensely what they do see; the scattered medium-sized cities are unionized islands in a hostile sea.

Farmers were furious when strikes made the shortage of farm

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machinery worse during and after the war. Farmers are chronically furious when strong transport unions in market towns force them to hire unneeded drivers, or pay "initiation fees" to bring their produce to town.

Rural and small town people who worked on big wartime construction jobs or in the big war factories were indignant when they had to pay union fees and submit to union discipline.

It is such a struggle to keep a union going in this climate of hostile employers and un-class-conscious workers that unions all too often fall into the hands of either leftist zealots (chiefly Communists) or selfish racketeers. No one else wants to bother, and these eager beavers alienate good union members as well as outsiders.

NEW rural recruits to unionism may support the strongest, most militant union for a while, accept retroactive pay rises it bludgeons out of employers—and then denounce unions in their next job or next election. Ordinary monopolistic union practices born out of fear of unemployment often strike them as outright swindles. "Selling the right to work," they cry out at straight union dues as well as the more exorbitant initiation fees and temporary work permits some unions exact. These feelings existed even before the coal strikes, the railroad strike, the telephone strike.

Before 1932 the field of labor legislation was almost exclusively a state matter. In 1947 the states are trying to reclaim their own.

(CONTINUED ON PAGE 105)

Industrial Briefs . . .

• **RAILROAD ORDER**—R. C. Stanhope, Inc., 60 East 42nd St., New York, announces completion of a large order and shipment of 260 30-ton and 20-ton box cars, flat cars and gondolas for the Argentine railroads.

• **NEW COMPANY**—Metallurgical Sales & Service Co., Hamilton, Ontario, has been formed to provide consulting and technical sales engineering services.

• **ORDERS UP 51.7 PCT**—Orders on the books of Burroughs Adding Machine Co., Detroit, have increased \$6 million since January, according to John S. Coleman, president of the company. Orders on the books are now 51.7 pct higher than during the first 3 months of last year, according to Burroughs officials.

• **UP FOR LEASE** — The New Castle (Pa.) aluminum forging plant is being offered for sale or lease by War Assets Administration. The plant was operated by Aluminum Co. of America, and is the last complete aluminum forging plant owned by the government. It was built at a cost of \$7,600,000 and contains 59 buildings on a 45-acre site formerly used by Carnegie-Illinois Steel Corp.

• **JOINS INSTITUTE**—G. Thomas Muehlenkamp, metallurgist, has been named to the staff of Battelle Institute, Columbus, Ohio, where he will be engaged in research on the engineering properties of materials.

• **NEW BRITISH FIRM**—A new British company has been formed, British Messier Ltd., to develop and market aircraft undercarriage, hydraulic, pneumatic and electrical equipment based upon the French Messier designs of the Societe Messier, Paris. The British Aeroplane Co. Ltd., is taking an interest in the new firm, whose address is Cheltenham Road East, Gloucester.

• **TO THE POINT** — Hotpoint, Inc. a General Electric subsidiary has announced an immediate construction program of \$10 million to expand its Chicago plant's facilities for the production of electric ranges. Project will represent a partial development of a 26 acre site purchased about 2 years ago and located in Cicero, Ill. Although in the planning stage the project is expected to be completed in 1947. Present expansion program will concentrate all the production of this units electric ranges in the Chicago area.

• **RADIOS TO PLASTICS**—Owen's Illinois Glass Co. has recently purchased from WAA a plant temporarily occupied by the Majestic Radio Corp. near St. Charles, Ill. The announced price was \$778,000 and the unit will be used by Owen's Glass for the production of plastic materials.

• **SETS UP RESEARCH DEPT.**—R. D. Fageol Co., Detroit, announces the establishment of a research department to further the development of undisclosed automotive devices. A company spokesman stated that a number of research projects are now underway.

• **COKE OVEN ORDER**—The Wilputte Coke Oven Corp., New York, has been awarded the contract for a battery of 74 new coke ovens to be erected at the Johnstown, Pa., plant of the Bethlehem Steel Co. The ovens will have a capacity of more than 1000 tons of furnace coke per day. Erection will begin at once and the project will be completed next year.

• **AWARDED MEDAL**—The James Watt International Medal, one of the highest international honors a mechanical engineer can receive, has been awarded to Dr. Stephen P. Timoshenko, professor emeritus of theoretical and applied mechanics at Stanford University.

Bethlehem Steel Raises Salaries and Extends Vacation Privileges

Bethlehem

• • • A 12 pct pay increase, effective Apr. 1, 1947, for salaried employees in the Steel Div, and an increase in vacations to 3 weeks for foremen and all other salaried supervisory employees in all divisions of Bethlehem Steel Corp. was announced by E. G. Grace, board chairman. "Supervisory employees" means those employees now exempted under the Wage and Hour Act.

The percentage pay increase applies to about 14,000 salaried employees in the Steel Div. earning \$750 per month or less, with a minimum increase of \$22 per month (based on a 40-hr week).

The increase from 2 to 3 weeks vacation for foremen and other supervisory employees becomes effective regardless of length of service. This will apply to about 9000 persons throughout the corporation.

None-supervisory salaried employees in the Steel Division will continue on a 2 weeks' vacation basis except that those with 25 years of service will receive 3 weeks' vacation.

Pittsburgh

• • • An agreement extending to salaried employees' conditions comparable to those recently applied to production and maintenance workers has been concluded between four United States Steel Corp. subsidiaries and the United Steelworkers of America (CIO). Under terms of the new labor agreement, a general increase of \$22 a month effective Apr. 1, 1947, a 3-week vacation after 25 years of service, severance pay, and other benefits included in the wage contract, are provided.

The agreement covers members of the union who are salaried employees of the American Steel & Wire Co., Carnegie-Illinois Steel Corp., Columbia Steel Co. and National Tube Co.

Negotiations between the Tennessee Coal, Iron & R.R. Co. and the union are also going on.

Salaried employees not covered by a union contract will get an adjustment in salaries but the company did not reveal the percentage or the amount.

Construction Steel . . .

••• Fabricated steel awards this week included the following:

- 8000 Tons, Peoria, Ill., Caterpillar Tractor Co. bldg., reported Apr. 17 as awarded to Carnegie-Illinois Steel Corp. was in error. Award was to Bethlehem Steel Co., Bethlehem.
- 2860 Tons, Defiance, Ohio, Building, Central Foundry Div., General Motors Corp., to Ingalls Iron Works Co., Birmingham.
- 2200 Tons, New Haven, Conn., gas holder, to Koppers Co., Bartlett Hayward Div., Baltimore.
- 2000 Tons, Passaic River, Route S-3, New Jersey Dept. of Highways, bridge, to Mt. Vernon Bridge Co., Mt. Vernon, Ohio.
- 1475 Tons, State of Texas, State Highway, Overpass, to American Bridge Co., Pittsburgh.
- 900 Tons, Tipton, Iowa, Cedar County, Bridge Section F-469-3 to American Bridge Co., Pittsburgh.
- 700 Tons, Crandall, Tex., state highway, bridge, to Virginia Bridge Co., Roanoke, Va.
- 475 Tons, Stratford, Iowa, Webster County F-811-4 to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 300 Tons, Sheridan, Ark., state highway bridge, to Virginia Bridge Co., Roanoke, Va.
- 275 Tons, Enola, Pa., Pennsylvania R.R. diesel motor shop, to Belmont Iron Works, Philadelphia.
- 140 Tons, Ames, Iowa, project 1-41 for Story Co., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 115 Tons, Marinette County, Wis., project 0545-1 to Worden-Allen Co., Milwaukee.
- 110 Tons, Bristol, Pa., Rohm & Haas Co. plant, Frank Warren, general contractor, to Bethlehem Steel Co., Bethlehem.

••• Fabricated steel inquiries this week included the following:

- 2550 Tons, Minneapolis, 64 butane tanks for United Petroleum & Gas Co. has been abandoned.
- 2300 Tons, Chicago, beams for prefabricated houses for Cowles Co., Inc.
- 1200 Tons, Camden, N. J., Our Lady of Lourdes Hospital, May 27.
- 1200 Tons, Minneapolis, 30 propane tanks for United Petroleum & Gas Co., has been abandoned.
- 650 Tons, Splendora, Tex., Texas state highway construction.
- 580 Tons, Hampton Harbor, N. J., bridge, New Jersey Dept. of Highways, Phoenix Bridge Co., low bidder.
- 500 Tons, Philadelphia, General Motors Truck Co., warehouse, May 20.
- 500 Tons, Cape May, N. J., Corsons' Inlet, bascule span and approaches, Cape May County Bridge Commission, May 26.
- 450 Tons, Millville, N. J., New Jersey Dept. of Highways, bids rejected.
- 350 Tons, Mechanicsburg, Pa., U. S. Navy supply building, May 19.
- 300 Tons, Norristown, Pa., Philadelphia Electric Co., substation, May 14.
- 250 Tons, Chicago, Pulaski school building, Chicago Board of Education.
- 250 Tons, Chicago bus terminal.
- 150 Tons, Longport, Ocean City, N. J., New Jersey Dept. of Highways, repair job, May 26.
- 150 Tons, Philadelphia, National Sugar Refining Co., warehouse, May 12.
- 100 Tons, Omaha, Neb., beam span for Union Pacific R. R.

••• Reinforcing bar awards this week included the following:

- 855 Tons, Enders Dam, Neb., Bureau of Reclamation, to Capitol Steel & Iron Co., Oklahoma City, Okla.
- 340 Tons, Los Angeles, undercrossing, Santa Ana Parkway at Euclid Ave., through Spencer Webb, to Bethlehem Pacific Coast Steel Co., San Francisco.
- 265 Tons, Milwaukee building for Plankinton Packing Co., through Hunzinger

Construction to J. T. Ryerson & Sons, Chicago.

- 130 Tons, Marion County, Ore., bridge on North Santiam Highway, through Kuckenberg Construction Co. to Soule Steel Co., Portland, Ore.

- 125 Tons, Lodi, Calif., bridge across Mokelumne River, through A. A. Edmondson and A. L. Miller, to F. A. Klinger, Stockton.

- 100 Tons, Elgin, Ill., building for Spiess Co., through Giertz & Sons to Bethlehem Steel Co., Bethlehem.

••• Sheet piling awards this week included the following:

- 140 Tons, Milwaukee dock wall for Gillen & Co. to Inland Steel Co., Chicago.

••• Sheet piling inquiries this week included the following:

- 2200 Tons, Wood River, Ill., power plant for Illinois Power Co.

Alcoa Signs for 15¢ Including Social Items

Pittsburgh

••• Aluminum Co. of America and the United Steelworkers of America, CIO, have agreed upon an over-all wage settlement of approximately 15¢ per hr, a number of revisions and improvements in the working contract, it was announced by M. M. Anderson, vice president in charge of industrial relations for Alcoa. The Company was represented in the negotiations by a committee headed by R. C. Turner, personnel director, and R. K. Heineman, assistant personnel director. Provisions of the new contract are to be effective for 2 years.

The 15¢ wage settlement, effective as of April 1, includes a 12¢ per hr general wage increase, with the remainder of approximately 3¢ per hr consisting of the following:

(1) Approximately 2¢ per hr for a non-contributory group life insurance plan, providing death benefits, sickness and accident insurance, hospitalization insurance, and insurance for cost of surgical operations. The company will pay the entire cost of the plan.

(2) The existing North-South differential between the plants represented by the union was further reduced 2¢ per hr at the union's request. About one-half of the employees represented are located in the southern plants. By an application of an amount equivalent to approximately 1¢ per hr for all represented, an increase of 2¢ per hr resulted for the employees in the southern plants.

(3) Three weeks vacation with pay for employees having more than 25 years of service.

Mr. Anderson also stated that "Increases, determined on an individual merit basis, have been

made effective to a large percentage of the salaried personnel during the past several months.

Allis Chalmers Grants 11½¢ Hourly Increase

Milwaukee

••• Allis Chalmers Mfg. Co.'s net loss for the first quarter of 1947 was \$2,161,864. The loss, Walter Geist, president, said was attributed to the strike. The company's billings in the first quarter amounted to \$32,288,816, and the bookings totaled \$54,669,841. This compares with the 1946 fourth quarter billings of \$30,036,785 and total bookings of \$46,657,987. Unfilled orders on the books Mar. 31, 1947, amounted to \$127,589,701.

Following the national trend, the company placed in effect a wage increase of 11½¢ an hour on May 1. Six paid holidays for all hourly wage employees not covered by collective bargaining agencies was also granted at the West Allis Works.

Simultaneously in all the company's plants a similar offer was made to AFL, CIO and the independent unions holding collective bargaining contracts with the company. New rates affect 27,000 employees of the company's eight plants and increases the payroll approximately \$7,000,000 annually.

Drops Surplus Property As Source of Building Materials for Housing

Washington

••• Surplus property will not be depended upon as a source of building materials under the emergency housing program after June 30, Housing Expediter Frank R. Creedon has revealed, because of the dwindling amounts of suitable items. The first move to step out of the surplus picture was taken recently with announcement that OHE certificates for surplus items would neither be accepted nor renewed after Apr. 30.

Through exercise of Priority Regulations, the Housing Expediter has extended special assistance in obtaining many millions of dollars worth of steel, soil pipe, bathtubs, construction machinery and tools, nails, and other items.

MACHINE TOOLS

... News and Market Activities

WAA Plans Large-Scale Donations of Surplus Machine Tools

• • • Reliable sources in the machine tool industry this week reported much uncertainty and a need for readjustment were still the predominant factors in the machine tool market. Business is still spotty and on an "as you find it" basis.

Lack of anything approaching a definite order pattern, and in fact, the very spotty character of the business, have been variously ascribed to many things, including the coming Machine Tool Show in September. None the less, much energy on the part of machine tool builders is being directed toward the show at this time.

Along with the Machine Tool Show, another bright spot on the horizon last week was the announcement of War Assets Administration that large quantities of surplus machine tools would be given away free to schools, federal, state and local government institutions and nonprofit organizations which are tax exempt.

The surplus inventory, valued at about \$769 million, will be offered first to priority buyers and commercial purchasers. What they do not buy will then be available for donation. According to WAA Administrator, Robert M. Littlejohn, it will be cheaper to give them away than to winterize and store them.

However, this marks the first time WAA has planned large-scale donations of surplus property and the first time that states and local governments can be beneficiaries. Administrator Littlejohn said that WAA now has the largest inventory of machine tools in history.

Coincident with Machine Tool Show preparations, wages and prices are rapidly reaching their peak critical focus in the postwar period, and by September, many manufacturers would be ripe for new shop equipment to an extent unsurpassed since the start of the war.

In allied vein, Charles J. Stilwell, president, Warner & Swasey Co., told the regional conference

Announces for First Time State And Local Governments Will Be Beneficiaries

• • •

of the National Assn. of Cost Accountants recently that the only reason his company ever sold a turret lathe, a tapping machine or an automatic was because someone needed their help in cutting the cost of production.

He said those machines, and the job of every man who has a part in making them, are rooted in somebody's desire and need for things at prices he can afford to pay.

Mr. Stilwell pointed out that in any discussion of cost reduction there are three distinct approaches, each one of which demands careful and individual attention, the opportunity for reduction in cost by adoption of improved methods; the engineering approach to cost reduction through the development of improved mechanical processes or equipment and more efficient layouts; and finally, obsolescence.

He said that unless industry adopts the most efficient tools and methods at its disposal, to increase the productivity of the individual worker, it is just begging half the question to call for more production.

"Unlike machines, into which we build the ultimate in controls, strength, and capacity at the very outset, man grows into his ultimate design through personal experience," Mr. Stilwell said. His strength, capacity and controls can be expected to increase gradually throughout most of his life span—and that's just as true of the man in the shop as it is of the designing engineer, sales executive, or even a cost accountant.

"When we build a machine tool, we establish the main strength in the crankshaft—the main working

part. We all know that cast crankshafts aren't good enough for the sustained high-speed operations expected of machines today, so we use the most advanced metallurgy and produce well-forged, heat-treated parts that can take the stress and strain to which they are subjected," he said.

"Present wage levels and living standards can only be supported if they are matched by increased productivity," Mr. Stilwell declared.

"Where the public—represented by the wartime federal budget—paid the price of slow-downs, strikes, and any other interference with production during those war years, we now have to pick up the ball ourselves, unless we want a bankrupt world.

"It is up to management and men, working together, to see how much each individual man can and will produce, to make the most of the billions already spent in capital investments," Mr. Stilwell concluded.

In the East, it is reported that dealers who had been somewhat pessimistic about the future volume of orders have been agreeably surprised by the business placed to date this year. They are of course anticipating the summer lull in new orders caused by the deferment of major purchases until the end of the vacation period. Optimism prevails among dealers for a high yearly volume of business.

One builder has announced price increases in circular tables and attachments and certain others are reported to have been contemplating price increases due to rising costs. Builders are reported to have been cutting down the order backlogs despite a shortage of competent mechanics troubling all builders. Except for specialized tools, most machines are deliverable within eight weeks. Even highly specialized equipment has been brought in the past few months from a backlog of about 52 weeks to 30 weeks.

MARVEL *Metal Cutting* SAWS

Better Machines—Better Blades

Regardless what type hack saw machines and metal-cutting band saw machines you use, MARVEL BLADES will improve performance. There are sound reasons why this is true; practical reasons that are easily understood and demonstrated.

MARVEL High-Speed-Edge Hack Saw Blades, with a genuine high-speed-steel cutting edge integrally welded to a tough alloy steel body, are both fast-cutting and positively unbreakable. This construction permits greatly increased speeds and feeds and tauter blade tensioning. Still, they last much longer than ordinary blades.

MARVEL High-Speed-Edge Hole Saws, with this same unbreakable construction and heavy-duty arbors, have the extra strength required for drill press and lathe use . . . rapidly saw holes from $\frac{5}{8}$ " to $4\frac{1}{2}$ " diameter thru steel of up to $1\frac{1}{8}$ " thickness.

MARVEL Band Saws are of selected quality. They come ready for use, pre-welded to size for each make and model saw. Individually boxed, they are protected against kinking, rusting or damage to teeth!

Write for Blade Catalog Sheet.

ARMSTRONG-BLUM MFG. CO.

5700 BLOOMINGDALE AVE. • CHICAGO 39, U. S. A.

NONFERROUS METALS

... News and Market Activities

Copper

••• The market operated last week on a three price basis with American Smelting & Refining Co., American Metal Co. and Anaconda Sales Co. selling copper from foreign ores at a price of 24¢ delivered Connecticut Valley. Domestic copper continued to be priced by major producers at 21.50¢. However, only a very limited tonnage of domestic copper is available to consumers. In addition, there is the *Engineering & Mining Journal* average price on which Metals Reserve copper is sold, and which is adhered to by some independent producers. This weighted average price has increased this week to reflect domestic sales at the higher price.

It is the opinion of informed observers that the relative shortage of domestic copper will cause the market to be stabilized at the 24¢ price for domestic and foreign copper sometime this week. One custom smelter advanced foreign copper to 24¢ on May 6 and was followed the next day by another smelter. Anaconda sold foreign copper last week at 24¢ while continuing to sell its domestic copper to fabricating subsidiaries. Kennecott continued to sell its domestic copper at 21.50¢. Kennecott is not planning for the importation of its Chilean copper unless under pressure from consumers for delivery of larger tonnages than can be delivered out of domestic production. Such copper would be priced f.a.s. Chilean ports at the equivalent of the 24¢ Valley price. Phelps-Dodge production is largely consumed by its own fabricating subsidiaries. Its price early this week was continued at 21.50¢.

Copper demand continues well

in excess of domestic production. Wire mills and brass mills continue to clamor for tonnages beyond the capacity of domestic producers. Sellers of foreign copper at the higher price report a significant buying volume regardless of the 2.5¢ increase. Custom smelters report that they are not selling any domestic copper, all sales being at the higher price.

While the brass mills are still calling for deliveries of copper, there are indications that the industrial pipelines for brass products and brass ingots are filling up and that the order backlogs of brass mills and foundries have already begun to feel the effects of curtailed demand.

Zinc

••• Zinc producers report that Prime Western is a little easier with some variation in the pressure of consumer demand which is apparently dependent on the availability of steel stock. Special High Grade has recently been reported by some producers to have eased considerably but at least one producer has been unable to meet current customer requirements. Brass mills continue to specify this grade despite the price spread between it and High Grade.

Lead

••• Demand for lead continues high, although it is gradually becoming apparent that certain industries which consumed large tonnages of lead are unable to operate at former rates. Wire and cable manufacturers are suffering from a shortage of copper and the battery industry is unable to ob-

tain sufficient battery cases to maintain its former high production rate. In addition, plant vacation shutdowns that are specified in most labor-management contracts today are exerting their effects on the demand for most metals. However, the need for lead by paint and tetraethyl gasoline producers is reported to be more than sufficient to compensate for the gradually declining demand in other industries.

Metals Scrap Prices Drop

New York

••• According to reports from dealers, the market for brass and copper scrap and aluminum is on the way down because buyers are out of the market. The refineries are reported to be the only buyers, with ingot producers, brass mills and foundries out of the market because of available inventories of scrap and curtailed order schedules. Scrap grades in both of these metals are down this week and there are indications that unless the market picture changes there may be further price declines. Dealers are not optimistic over the possibility of a rise in copper and brass scrap prices even when the price of primary metal goes to 24¢.

Raise Tungsten Price

New York

••• A shortage of tungsten ore coupled with the increased world demand has increased costs of such ores and required an upward revision of the prices of ferro-tungsten and tungsten powder, it has been announced by the Electro Metallurgical Sales Corp. Effective June 1 on contracts, and immediately for spot sales, ferro-tungsten prices are increased 17¢ (per lb) of contained tungsten, making the new eastern zone contract price \$2.25 in lots of 10,000 lb or more of contained tungsten. Tungsten metal powder prices are increased 10¢ (per lb), making the new eastern zone price for the melting grade \$2.90 in lots of 1000 lb or more.

Nonferrous Metals Prices

Cents per pound

| | May 7 | May 8 | May 9 | May 10 | May 12 | May 13 |
|-----------------------------|--------|--------|--------|--------|--------|--------|
| Copper, electro, Conn. | 21.50— | 21.50— | 21.50— | 21.50— | 21.50— | 21.50— |
| | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 |
| Copper, Lake, Conn. | 21.625 | 21.625 | 21.625 | 21.625 | 21.625 | 21.625 |
| Tin, Straits, New York | 80.00 | 80.00 | 80.00 | 80.00 | 80.00 | 80.00 |
| Zinc, East St. Louis | 10.50 | 10.50 | 10.50 | 10.50 | 10.50 | 10.50 |
| Lead, St. Louis | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 |

NONFERROUS METALS PRICES

Primary Metals

(Cents per lb, unless otherwise noted)

| | |
|--|--------------------|
| Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb) | 15.00 |
| Aluminum pig, f.o.b. shipping point | 14.00 |
| Antimony, American Laredo Tex. | 33.00 |
| Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be | 14.75 |
| Beryllium aluminum, 5% Be; dollars per lb contained Be | 27.50 |
| Cadmium, del'd | 1.75 |
| Cobalt, 97-99% (per lb) | \$1.50 to \$1.57 |
| Copper, electro, Conn. Valley | 21.50 |
| Copper, lake, Conn. Valley | 21.625 |
| Gold, U. S. Treas., dollars per oz. | 35.00 |
| Indium, 99.8%, dollars per troy oz. | 32.25 |
| Iridium, dollars per troy oz. | \$85 to \$95 |
| Lead, St. Louis | 14.80 |
| Lead, New York | 15.00 |
| Magnesium, 99.8+%, | 20.50 |
| Magnesium, sticks, carlots | 36.00 |
| Mercury, dollars per 76-lb flask, f.o.b. New York | \$85.00 to \$87.00 |
| Nickel, electro, f.o.b. New York | 37.67 |
| Palladium, dollars per troy oz. | \$24.00 |
| Platinum, dollars per troy oz. | \$59 to \$62 |
| Silver, New York, cents per oz. | 72.75 |
| Tin, Straits, New York | 80.00 |
| Zinc, East St. Louis | 10.50 |
| Zinc, New York | 11.005 |
| Zirconium copper, 6 pct Zr, per lb contained Zr | \$8.75 |

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

| | |
|------------------|-------|
| 85-5-5-5 ingot | |
| No. 115 | 20.50 |
| No. 120 | 20.00 |
| No. 123 | 19.50 |
| 80-10-10 ingot | |
| No. 305 | 24.50 |
| No. 315 | 22.75 |
| 88-10-2 ingot | |
| No. 210 | 23.25 |
| No. 215 | 27.25 |
| No. 245 | 22.75 |
| Yellow ingot | |
| No. 405 | 16.25 |
| Manganese Bronze | |
| No. 421 | 18.50 |

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

| | |
|---|-------------|
| 95-5 aluminum-silicon alloys: | |
| 0.30 copper, max. | 17.00 |
| 0.60 copper, max. | 16.25-16.75 |
| Piston alloys (No. 122 type) 15.00-15.25 | |
| No. 12 alum. (No. 2 grade) | 14.50 |
| 108 alloy | 14.75 |
| 195 alloy | 15.25-15.50 |
| AXS-679 | 14.75 |
| Steel deoxidizing aluminum, notch-bar, granulated or shot | |
| Grade 1—95 pct-97½ pct | 15.50 |
| Grade 2—92 pct-95 pct | 14.50 |
| Grade 3—90 pct-92 pct | 13.75 |
| Grade 4—85 pct-90 pct | 13.25 |

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

| | |
|--------------------------------------|-----|
| Copper, frt. allowed | |
| Cast, oval, 15 in. or longer | 36% |
| Electrodeposited | 31% |
| Rolled, oval, straight, delivered .. | 32% |
| Brass, 80-20, frt allowed | |
| Cast, oval, 15 in. or longer | 33 |
| Zinc, Cast, 99.99 | 18% |
| Nickel, 99 pct plus, frt allowed | |
| Cast | 51 |
| Rolled, depolarized | 52 |
| Silver, 999 fine | |
| Rolled, 1000 oz lots, per oz. | 88% |

Chemicals

(Cents per lb, f.o.b. shipping point)

| | |
|---|-------|
| Copper cyanide, 100 lb drum | 40.50 |
| Copper sulphate, 99.5, crystals, bbls | 11.50 |
| Nickel salts, single, 425 lb bbls, frt allowed | 14.50 |
| Silver cyanide, 100 oz, lots, per oz 70% | |
| Sodium cyanide, 96 pct, domestic, 200 lb drums | 15.00 |
| Zinc cyanide, 100 lb drums | 34.00 |
| Zinc, sulphate, 89 pct, crystals, bbls, frt allowed | 7.75 |

Mill Products

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall: 3S, 43.5¢; 52S-O, 67¢; 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢ 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S, 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 37.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢; 1 in., 2 in., 27¢; base, 5000 lb. Rod: 2S, 3S, 1¼ to 2½ in. diam, rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. Round Wire: drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base. B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢. B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

Magnesium

(Cents per lb, f.o.b. mill, Base quantity 30,000 lb.)

Sheet and Plate: Ma. FSA. ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 14, 69¢-74¢; 16, 79¢-81¢; 18, 87¢-89¢; 22, \$1.25-\$1.31; 24, \$1.71-\$1.75.

Round Rod, Square and Hexagonal Bar: M, diam, in. ¼ to ¾, 55¢; ¾ to 1½, 52.5¢; 1½ to 4 in. and over, 52¢. Other alloys higher.

Extruded Solid Shapes and Rectangles: M, form factors 1 to 4, 52¢; 8 to 10, 53.5¢; 14 to 16, 56.5¢; 20 to 22, 61¢; 26 to 28, 68¢. Other alloys higher.

Tubing: M, based on weight in pounds per lineal foot, 2 lb. and over, 55¢; 1 to 1.5, 58.5¢; 0.5 to 0.7, 64¢; 0.35 to 0.4, 69¢; 0.25 to 0.3, 73¢; 0.15 to 0.2, 81¢; 0.085 to 0.10, 96¢; 0.05 to 0.06, \$1.14; 0.04 to 0.045, \$1.23. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

| | Nickel | Monel |
|---------------------------|--------|-------|
| Sheets, cold-rolled | 54 | 43 |
| No. 35 sheets | 41 | |
| Strip, cold-rolled | 60 | 44 |
| Rod | | |
| Hot-rolled | 50 | 39 |
| Cold-drawn | 55 | 44 |
| Angles, hot-rolled | 50 | 39 |
| Plates | 52 | 41 |
| Seamless tubes | 83 | 71 |
| Shot and blocks | | 31 |

Zinc

(Cents per lb, f.o.b. mill)

| | |
|-------------------------|-------|
| Sheet, l.c.l. | 15.50 |
| Ribbon, ton lots | 14.50 |
| Plates | |
| Small | 13.50 |
| Large, over 12 in. | 14.50 |

Copper, Brass, Bronze

(Cents per lb)

| | Extruded Shapes | Rods | Sheets |
|------------------------------|-----------------|-------|--------|
| Copper | 32.78 | | 32.93 |
| Copper, hot rolled | | 29.28 | |
| Copper, drawn | | 30.28 | |
| Low brass | 39.13 | 30.32 | 30.63 |
| High brass | 32.30 | 29.58 | 29.89 |
| Red brass | 39.74 | 30.93 | 31.24 |
| Naval brass | 28.73 | 27.48 | 33.42 |
| Brass, free cutting | 27.23 | 23.64 | |
| Commercial bronze | 40.86 | 32.05 | 32.36 |
| Manganese bronze | 32.23 | 30.78 | 36.92 |
| Phosphor bronze, 5 pct. | | 50.98 | 50.75 |
| Muntz metal | 28.42 | 27.17 | 31.61 |
| Everdur, Herculey | | | |
| Olympic, etc | 36.30 | 34.80 | 37.71 |
| Nickel silver, 5 pct. | 40.54 | 39.53 | 37.92 |
| Architectural bronze | 27.23 | | |

Scrap Metals

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Brass Mill Scrap

(Lots of less than 15,000 lb.)

| | |
|------------------------------------|-----|
| Cartridge brass turnings | 14¼ |
| Loose yellow brass trimmings | 15¼ |

Copper and Brass

| | |
|-----------------------------------|--------|
| No. 1 heavy copper and wire | 16½-17 |
| No. 2 heavy copper and wire | 15¼-16 |
| Light copper | 14¼-15 |
| Auto radiators (unswaged) | 10-10½ |
| No. 1 composition | 13-13½ |
| No. 1 composition turnings | 12½-13 |
| Clean red car boxes | 12-12½ |
| Cocks and faucets | 10½-11 |
| Mixed heavy yellow brass | 8½-9 |
| Old rolled brass | 9½-10 |
| Brass pipe | 12½-13 |
| New soft brass clippings | 11½-12 |
| Brass rod ends | 11-11½ |
| No. 1 brass rod turnings | 11-11½ |

Aluminum

| | |
|------------------------------------|------|
| Alum. pistons free of struts | 5½-6 |
| Aluminum crankcases | 5½-6 |
| 2S aluminum clippings | 7-7½ |
| Old sheet & utensils | 6-6½ |
| Mixed borings and turnings | 2-2½ |
| Misc. cast aluminum | 5½-6 |
| Dural clips (24S) | 5½-6 |

Zinc

| | |
|--------------------------|-------|
| New zinc clippings | 7½-8 |
| Old zinc | 5½-6 |
| Zinc routings | 2½-2¾ |
| Old die cast scrap | 3½-4 |

Nickel and Monel

| | |
|--------------------------------------|---------|
| Pure nickel clippings | 19½-20½ |
| Clean nickel turnings | 16½-17½ |
| Nickel anodes | 19½-20½ |
| Nickel rod ends | 19-20 |
| New Monel clippings | 14-15 |
| Clean Monel turnings | 9-10 |
| Old sheet Monel | 12-13 |
| Old Monel castings | 10-11 |
| Inconel clippings | 10-11 |
| German silver clippings, mixed | 10½-11 |
| German silver turnings, mixed | 7-7½ |

Lead

| | |
|----------------------------|--------|
| Soft scrap lead | 12½-13 |
| Battery plates (dry) | 7½-7¾ |

Miscellaneous

| | |
|-------------------------------------|---------|
| Block tin | 67-68 |
| No. 1 pewter | 50-52 |
| No. 1 auto babbitt | 40-43 |
| Mixed common babbitt | 13½-14 |
| Solder joints | 15½-16 |
| Siphon tops | 40-42 |
| Small foundry type | 15½-16 |
| Monotype | 13½-13¾ |
| Lino and stereotype | 12¾-13¼ |
| Electrotype | 10¾-11¼ |
| New type shell cuttings | 10½-11 |
| Clean hand picked type shells | 5½-6 |
| Lino and stereo dross | 5½-6 |
| Electro dross | 3¼-3½ |

Lead Products

(Cents per lb)

| | |
|---|-----------|
| F.o.b. shipping point freight collect. Freight equalized with nearest free delivery point. | |
| Full lead sheets | 18.25 |
| Cut lead sheets | 18.75 |
| Lead pipe, manufacturing point | 17.50 |
| Lead traps and bends | List +42% |
| Combination lead and iron bends and ferrules, also combination lead and iron ferrules | List +42% |
| Lead wool | 19.50 |

SCRAP

... News and Market Activities

Prices Mixed With Some Stability Seen

New York

... Steel scrap price declines were conspicuous by their absence from the majority of markets this week. There were a few, but there were some minor gains, too. In fact, steel scrap prices were mixed in all grades while cast materials were generally somewhat easier.

No. 1 heavy melting steel was off an average of 50¢ a ton in Chicago this week. It was up \$1 at Cleveland and 25¢ at Detroit, and went unchanged at Pittsburgh, Philadelphia, Birmingham, Youngstown and Buffalo. No. 1 cupola cast dropped \$1 in Cincinnati, \$2 in Pittsburgh and \$3.50 in Philadelphia. Turnings indicated the lack of a general trend throughout the country by rising at Pittsburgh, Youngstown and Cleveland, dipping at Chicago, Cincinnati, Boston and St. Louis, and remaining steady in Philadelphia, Birmingham, Buffalo and New York.

A "Where do we go from here?" attitude cropped up in some sections of the trade. Some buyers were still expecting lower prices—and backing their wishes either by staying out of the market or by buying in dribbles. Few believe big fast declines are anywhere in the immediate future and many see ahead a period of relative stability. The latter view is borne out by the fact that price changes have been fewer in number and smaller in amount during May than at any time since the beginning of the year.

PITTSBURGH—The scrap market here is in a state of balance and only time will tell which way it goes. Purchases in an adjacent area recently at \$1.75 a ton over the Pittsburgh price on heavy melting tended to strengthen the market here, but local mills show no tendency to buy or go back into the market. Thus one factor offsets the other. Mills here indicate that inventories are good and that they have no intention of coming into the market at present for any substantial tonnages. Odd lot buying goes on steadily, but not in sufficient quantities to indicate any trends. The prices quoted on railroad heavy melting last week from Pittsburgh were in error, having actually been \$33.50 to \$34 a ton. The relatively high prices paid for railroad heavy scrap is at least partially accounted for by the fact that foundries are buying it in lieu of higher priced low phos scrap. Cupola cast prices eased somewhat this

week, but no wholesale decline is anticipated.

CHICAGO—Scrap buyers are still hesitant to buy large tonnages. Mills say they are in a comfortable position and are getting very critical in grading shipments. Railroad specialties slipped very little and malleable continues to move at high prices. Many foundries are out of the market entirely and are marking time as they believe prices will soften further.

PHILADELPHIA—No price change occurred in prime grades of heavy melting last week although declines were reported in No. 2 bundles and melting. All cast grades declined several dollars; low phos grades had slightly less of a drop. For the first time malleable scrap showed appreciable price weakness, despite a continuing shortage. Railroad specialties continued at the previous levels based on a recent railroad award. Mills are continuing to order in small tonnages anticipating a further decline in the market. Other factors are anticipating a stronger market based on the high operating rate and a relative shortage of scrap. It is reported that some collectors have been discouraged by current prices and yard receipts have been small.

NEW YORK—The release of some high priced orders shot a little life into the market late last week but a few days later it had settled down and most sources agree it showed more stability than it had in months. Price changes in steel grades were minor, cast was unchanged. Peddler activity has fallen off a bit but light iron receipts are holding up. The price differential in openhearth grades is because some mills, notably in eastern Pennsylvania, insist on stricter grading while shipments going west are not affected.

DETROIT—Prices have stiffened this week with low phos plate now selling at a price that is \$1.75 above last week's quotation. In line with the trend in certain other areas, the price differential between openhearth and low phos grades is widening although the amount of the spread is difficult to determine because little new business is being placed, most deliveries being against old orders. Large scrap users here have their fingers crossed while they try to anticipate what may be the possible effects on the scrap market of recent shutdowns in the auto industry that are being attributed to a lack of steel supplies.

CLEVELAND—Major interest in the scrap market here and in the Valley centers around some small tonnages bought by major consumers. A strong demand for the blast furnace grades has firmed up prices to some extent, and some old, high priced orders which will not be dead until the 19th, are keeping the market alive at the moment. Some attempt is being made to restore some of the prewar differentials on various grades, which is another contributing

factor to the broad spread in No. 1 grades.

BOSTON—Business has dropped to such meager proportions prices have become hazy. A small tonnage of heavy steel sold the past week to Worcester at \$23.50 a ton. Brokers now bid \$22 to \$23, prices that have not attracted sellers. Yards maintain price slump is overdone and an upswing is due. Yard stocks of low grade scrap are a little larger; of heavy steel small. Cast is scarce and in good demand with nothing currently selling for less than \$45 a ton.

BUFFALO—A \$6 break in malleable highlighted an otherwise steady market this week. Trade in this specialty has been slow and consumers are taking advantage of the sloppy condition to obtain new supplies at more favorable prices. Openhearth grades achieved a fair degree of stability, largely due to a falling off in heavy offerings. Cast scrap was in plentiful supply, but foundries were absorbing it at a good rate. The first 1947 canal shipment from the seaboard comprising 2500 tons was reported held up in the eastern end of the system by high water. The Lake movement of scrap is scheduled to get under way about June 1.

CINCINNATI—Hesitancy underlines the present scrap market. With most users in good position, purchases are being held to minimum and trading is none too active. As a result the entire list is off about \$1 except for rails which are still holding on current railroad sales. Supply appears to be adequate on the basis of present demand.

BIRMINGHAM—For the first time in several weeks, scrap prices in this market have not declined. Peddler activity has lessened with the relative softness of the market. Dealers report a substantial drop in collections, one asserting that his receipts have fallen off 75 pct. from the volume of 2 months ago.

ST. LOUIS—Further declines of from \$1 to \$2 a ton, caused a slowing down of shipments, but the movement is balanced with the melt, which has been cut because of a strike in one plant and repairs in another. No. 2 heavy melting steel is most active item, with prices \$1 to \$1.50 lower than a week earlier. Malleable grades and car wheels, which continue scarce, are firm at unchanged prices.

TORONTO—Canadian steel mills and foundries are facing serious shortage of scrap iron and steel and unless early remedy is forthcoming, it may be necessary to curtail steelmaking operations. No effort is being made to gather in the available scrap in the farm communities, and it also is reported that there are big tonnages of steel produced for war purposes that are not adaptable to peacetime manufacturing, that could be put on the market for scrap, but are being held pending a decision as to their disposal by War Assets Corp. The price situation appears to be the principal reason for the current scrap shortages.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

| | |
|-----------------------|--------------------|
| No. 1 hvy. melting | \$29.50 to \$30.00 |
| RR. hvy. melting | 33.50 to 34.00 |
| No. 2 hvy. melting | 29.50 to 30.00 |
| RR. scrap rails | 35.00 to 39.00 |
| Rails 2 ft. and under | 42.00 to 42.50 |
| No. 1 comp'd bundles | 29.50 to 30.00 |
| Hand bldd. new shfts | 29.50 to 30.00 |
| Hvy. axle turn | 29.00 to 29.50 |
| Hvy. steel forge turn | 29.00 to 29.50 |
| Mach. shop turn | 27.00 to 28.00 |
| Short shov. turn | 28.50 to 29.00 |
| Mixed bor. and turn | 27.00 to 28.00 |
| Cast iron borings | 28.50 to 29.00 |
| No. 1 cupola cast | 39.00 to 40.00 |
| Heavy breakable cast | 30.00 to 30.50 |
| Malleable | 44.00 to 45.00 |
| RR. knuck and coup. | 41.00 to 42.00 |
| RR. coil springs | 41.00 to 42.00 |
| Rail leaf springs | 41.00 to 42.00 |
| Rolled steel wheels | 41.00 to 42.00 |
| Low phos | 37.50 to 38.50 |

CHICAGO

Per gross ton delivered to consumer:

| | |
|---------------------------|--------------------|
| No. 1 hvy. melting | \$29.00 to \$29.50 |
| No. 2 hvy. melting | 28.00 to 28.50 |
| No. 1 bundles | 29.00 to 29.50 |
| No. 2 dealers' bundles | 28.00 to 28.50 |
| Bundled mach. shop turn | 28.00 to 28.50 |
| Galv. bundles | 26.00 to 26.50 |
| Mach. shop turn | 23.00 to 23.50 |
| Short shov. turn | 25.00 to 25.50 |
| Cast iron borings | 24.00 to 24.50 |
| Mix. borings & turn | 23.00 to 23.50 |
| Low phos. hvy. forge | 33.00 to 33.50 |
| Low phos. plates | 30.50 to 31.00 |
| No. 1 RR. hvy. melt. | 29.50 to 30.00 |
| Rerolling rails | 36.00 to 36.50 |
| Miscellaneous rails | 33.00 to 34.00 |
| Angles & splice bars | 35.50 to 36.00 |
| Locomotive tires, cut | 38.00 to 38.50 |
| Cut bolster & side frames | 35.50 to 36.00 |
| Standard stl. car axles | 38.00 to 38.50 |
| No. 3 steel wheels | 35.00 to 35.50 |
| Couplers & knuckles | 36.00 to 36.50 |
| Malleable | 46.00 to 47.00 |
| No. 1 mach. cast | 37.00 to 37.50 |
| Rails 2 ft. and under | 37.00 to 38.00 |
| No. 1 agricul. cast | 36.00 to 36.50 |
| Hvy. breakable cast | 34.00 to 34.50 |
| RR. grate bars | 32.00 to 32.50 |
| Cast iron brake shoes | 36.00 to 36.50 |
| Cast iron carwheels | 34.50 to 35.00 |

CINCINNATI

Per gross ton delivered to consumer:

| | |
|---------------------|--------------------|
| No. 1 hvy. melting | \$26.00 to \$27.00 |
| No. 2 hvy. melting | 26.00 to 27.00 |
| No. 1 bundles | 26.00 to 27.00 |
| No. 2 bundles | 26.00 to 27.00 |
| Mach. shop turn | 19.00 to 20.00 |
| Shoveling turn | 21.00 to 22.00 |
| Cast iron borings | 19.00 to 20.00 |
| Mixed bor. & turn | 19.00 to 20.00 |
| Low phos. plate | 36.00 to 37.00 |
| No. 1 cupola cast | 42.00 to 44.00 |
| Hvy. breakable cast | 33.00 to 34.00 |
| Scrap rails | 38.00 to 39.00 |

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

| | |
|-----------------------|--------------------|
| No. 1 hvy. melting | \$22.00 to \$23.00 |
| No. 2 hvy. melting | 22.00 to 23.00 |
| Nos. 1 and 2 bundles | 22.00 to 23.00 |
| Bushelling | 20.00 to 21.00 |
| Turnings, shovellings | 19.00 to 19.50 |
| Machine shop turn | 17.00 to 17.50 |
| Mixed bor. & turn | 17.00 to 17.50 |
| C'n cast. chem. bor. | 22.00 to 24.50 |
| No. 1 machinery cast | 45.00 |
| No. 2 machinery cast | 45.00 |
| Heavy breakable cast | 45.00 |
| Stove plate | 45.00 |

DETROIT

Per gross, ton, brokers' buying prices, f.o.b. cars:

| | |
|---------------------|--------------------|
| No. 1 hvy. melting | \$24.75 to \$25.25 |
| No. 2 hvy. melting | 24.75 to 25.25 |
| No. 1 bundles | 24.75 to 25.25 |
| New bushelling | 24.75 to 25.25 |
| Flashings | 24.75 to 25.25 |
| Mach. shop turn | 21.50 to 22.00 |
| Short shov. turn | 22.50 to 23.00 |
| Cast iron borings | 22.50 to 23.00 |
| Mixed bor. & turn | 22.50 to 23.00 |
| Low phos. plate | 28.25 to 28.75 |
| No. 1 cupola cast | 33.00 to 35.00 |
| Hvy. breakable cast | 26.00 to 28.00 |
| Stove plate | 30.00 to 32.00 |
| Automotive cast | 33.00 to 35.00 |

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. melting | \$29.50 to \$30.00 |
| No. 2 hvy. melting | 28.00 to 28.50 |
| No. 1 bundles | 29.50 to 30.00 |
| No. 2 bundles | 26.00 to 26.50 |
| Mach. shop turn | 22.00 to 23.00 |
| Shoveling turn | 22.50 to 23.00 |
| Mixed bor. & turn | 20.50 to 21.00 |
| Clean cast chemical bor. | 29.50 to 30.00 |
| No. 1 cupola cast | 40.00 to 42.00 |
| Hvy. breakable cast | 37.00 to 38.00 |
| Cast. charging box | 38.00 to 39.00 |
| Clean auto cast | 40.00 to 42.00 |
| Hvy. axle forge turn | 29.50 to 30.00 |
| Low phos. plate | 32.00 to 33.00 |
| Low phos. punchings | 32.00 to 33.00 |
| Low phos. bundles | 30.00 to 31.00 |
| RR. steel wheels | 35.00 to 36.00 |
| RR. coil springs | 35.00 to 36.00 |
| RR. malleable | 46.00 to 48.00 |

ST. LOUIS

Per gross ton delivered to consumer:

| | |
|-------------------------|--------------------|
| No. 1 hvy. melting | \$30.00 to \$30.50 |
| No. 2 hvy. melting | 27.00 to 27.50 |
| Bundled sheets | 27.00 to 27.50 |
| Mach. shop turn | 20.00 to 20.50 |
| Locomotive tires, uncut | 34.00 to 35.00 |
| Mis. std. sec. rails | 31.00 to 32.00 |
| Rerolling rails | 32.00 to 33.00 |
| Steel angle bars | 37.00 to 38.00 |
| Rails 3 ft. and under | 37.00 to 38.00 |
| RR. steel springs | 36.50 to 37.50 |
| Steel car axles | 36.00 to 37.00 |
| Stove plate | 34.00 to 35.00 |
| Grate bars | 34.00 to 35.00 |
| Brake shoes | 35.00 to 36.00 |
| Malleable | 47.00 to 49.00 |
| Cast iron car wheels | 41.00 to 42.00 |
| No. 1 machinery cast | 36.00 to 37.00 |
| Breakable cast | 31.50 to 32.50 |

BIRMINGHAM

Per gross ton delivered to consumer:

| | |
|----------------------|------------------|
| No. 1 hvy. melting | \$27.00 |
| No. 2 hvy. melting | 27.00 |
| No. 2 bundles | 27.00 |
| No. 1 bushelling | 27.00 |
| Long turnings | 22.00 |
| Shoveling turnings | 24.00 |
| Cast iron borings | 23.00 |
| Bar crops and plate | \$29.00 to 30.00 |
| Structural and plate | 29.00 to 30.00 |
| No. 1 cast | 36.00 to 37.00 |
| Stove plate | 34.00 to 35.00 |
| No. 1 RR hvy. melt. | 28.00 |
| Steel axles | 30.00 to 31.00 |
| Scrap rails | 30.00 to 31.00 |
| Rerolling rails | 32.00 to 33.00 |
| Angles & splice bars | 29.00 to 30.00 |
| Rails 3 ft. & under | 29.00 to 30.00 |
| Cast iron carwheels | 30.00 to 31.00 |

YOUNGSTOWN

Per gross ton delivered to consumer:

| | |
|---------------------|--------------------|
| No. 1 hvy. melting | \$30.50 to \$31.50 |
| No. 2 hvy. melting | 30.50 to 31.50 |
| Low phos. plate | 35.50 to 36.00 |
| Mach. shop turn | 26.50 to 27.00 |
| Short shov. turn | 27.50 to 28.00 |
| Cast iron borings | 27.50 to 28.00 |
| Elec. furnace punch | 35.50 to 36.00 |

NEW YORK

Brokers' buying prices per gross ton, on cars:

| | |
|----------------------|--------------------|
| No. 1 hvy. melting | \$24.00 to \$25.00 |
| No. 2 hvy. melting | 23.00 to 25.00 |
| No. 2 bundles | 23.00 to 25.00 |
| Comp. galv. bundles | 21.00 to 23.00 |
| Mach. shop turn | 17.50 to 18.75 |
| Mixed bor. & turn | 17.50 to 18.75 |
| Shoveling turn | 18.50 to 20.75 |
| No. 1 cupola cast | 34.00 to 35.00 |
| Hvy. breakable cast | 33.00 to 34.00 |
| Charging box cast | 33.00 to 34.00 |
| Stove plate | 33.00 to 34.00 |
| Clean auto cast | 34.00 to 35.00 |
| Unstrip. motor blks. | 30.00 to 32.00 |
| C'n chem. cast bor. | 22.50 to 23.00 |

BUFFALO

Per gross ton delivered to consumer:

| | |
|-----------------------|--------------------|
| No. 1 hvy. melting | \$29.00 to \$30.00 |
| No. 2 hvy. melting | 29.00 to 30.00 |
| No. 1 bundles | 29.00 to 30.00 |
| No. 2 bundles | 29.00 to 30.00 |
| No. 1 bushelling | 29.00 to 30.00 |
| Mach. shop turn | 21.00 to 22.00 |
| Shoveling turn | 23.00 to 24.00 |
| Cast iron borings | 21.00 to 22.00 |
| Mixed bor. & turn | 21.00 to 22.00 |
| No. 1 cupola cast | 35.00 to 38.00 |
| Charging box cast | 29.00 to 30.00 |
| Stove plate | 30.00 to 35.00 |
| Clean auto cast | 35.00 to 38.00 |
| Malleable | 39.00 to 41.00 |
| Low phos. plate | 32.00 to 34.00 |
| Scrap rails | 32.00 to 35.00 |
| Rails 3 ft. & under | 37.00 to 38.00 |
| RR. steel wheels | 37.00 to 38.00 |
| Cast iron carwheels | 37.00 to 38.00 |
| RR. coil & leaf spgs. | 37.00 to 38.00 |
| RR. knuckles & coup. | 37.00 to 38.00 |

CLEVELAND

Per gross ton delivered to consumer:

| | |
|-----------------------|--------------------|
| No. 1 hvy. melting | \$29.50 to \$31.00 |
| No. 2 hvy. melting | 29.50 to 31.00 |
| Compressed sheet stl. | 29.50 to 31.00 |
| Drop forge flashings | 29.50 to 31.00 |
| No. 2 bundles | 29.50 to 31.00 |
| Mach. shop turn | 24.50 to 25.00 |
| Short shovel | 26.00 to 26.50 |
| No. 1 bushelling | 29.50 to 31.00 |
| Steel axle turn | 29.50 to 31.00 |
| Cast iron borings | 26.00 to 26.50 |
| Mixed bor. & turn | 25.00 to 26.50 |
| No. 1 machinery cast | 40.00 to 42.00 |
| Malleable | 50.00 to 55.00 |
| RR. cast | 40.00 to 41.00 |
| Railroad grate bars | 37.00 to 38.00 |
| Stove plate | 37.00 to 38.00 |
| RR. hvy. melting | 32.00 to 32.50 |
| Rails 3 ft. & under | 39.00 to 40.90 |
| Rails 18 in. & under | 40.00 to 41.00 |
| Elec. furnace punch | 33.00 to 33.50 |

SAN FRANCISCO

Per gross ton delivered to consumer:

| | |
|------------------------|------------------|
| No. 1 hvy. melting | \$19.50 |
| No. 2 hvy. melting | 19.50 |
| No. 2 bales | 19.50 |
| No. 3 bales | 16.00 |
| Mach. shop turn | 13.00 |
| Elec. furn. 1 ft. und. | 25.00 |
| No. 1 cupola cast | \$32.00 to 33.00 |
| RR. hvy. melting | 20.50 |

LOS ANGELES

Per gross ton delivered to consumer:

| | |
|--------------------|------------------|
| No. 1 hvy. melting | \$19.50 |
| No. 2 hvy. melting | 19.50 |
| No. 1 bales | 19.50 |
| No. 2 bales | 19.50 |
| No. 3 bales | 16.00 |
| Mach. shop turn | 14.50 |
| No. 1 cupola cast | \$35.00 to 36.00 |
| RR. hvy. melting | 20.50 |

SEATTLE

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 & No. 2 hvy. melt. | \$20.00 to \$21.00 |
| Elec. furn. 1 ft. und. | 23.00 to 25.00 |
| No. 1 cupola cast | 26.00 to 27.00 |
| RR. hvy. melting | 21.00 to 22.00 |

HAMILTON, ONT.

Per gross ton delivered to consumer:

Cast grades f.o.b. shipping point

| | |
|--------------------------|----------|
| Heavy melting | \$17.50* |
| No. 1 bundles | 17.50* |
| No. 2 bundles | 17.00* |
| Mixed steel scrap | 15.50* |
| Rails, remelting | 18.50* |
| Rails, rerolling | 21.50* |
| Bushellings | 13.00* |
| Mixed borings & turnings | 12.50* |
| Electric furnace bundles | 20.50* |
| Manganese steel scrap | 20.00* |
| No. 1 cast | 19.00* |
| Stove plate | 17.50* |
| Car wheels, cast | 19.50* |
| Malleable iron | 16.00* |

* Ceiling price

Comparison of Prices . .

Advances over past week in Heavy Type, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

| Flat-Rolled Steel: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|------------------------------------|--------------|-------------|---------------|--------------|
| (cents per pound) | | | | |
| Hot-rolled sheets | 2.50 | 2.50 | 2.50 | 2.425 |
| Cold-rolled sheets | 3.20 | 3.20 | 3.20 | 3.275 |
| Galvanized sheets (10 ga.) | 3.55 | 3.55 | 3.55 | 4.05* |
| Hot-rolled strip | 2.50 | 2.50 | 2.50 | 2.35 |
| Cold-rolled strip | 3.20 | 3.20 | 3.20 | 3.05 |
| Plates | 2.65 | 2.65 | 2.65 | 2.50 |
| Plates, wrought iron | 5.95 | 5.95 | 5.95 | 4.112 |
| Stain's c-r strip (No. 302) *24 ga | 30.30 | 30.30 | 30.30 | 30.30 |

| Tin and Terneplate: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|-----------------------------|--------------|-------------|---------------|--------------|
| (dollars per base box) | | | | |
| Tinplate, standard cokes | \$5.75 | \$5.75 | \$5.75 | \$5.00 |
| Tinplate, electro (0.50 lb) | 5.05 | 5.05 | 5.05 | 4.50 |
| Special coated mfg. ternes | 4.90 | 4.90 | 4.90 | 4.30 |

| Bars and Shapes: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|--------------------------|--------------|-------------|---------------|--------------|
| (cents per pound) | | | | |
| Merchant bars | 2.60 | 2.60 | 2.60 | 2.50 |
| Cold-finished bars | 3.20 | 3.20 | 3.20 | 3.10 |
| Alloy bars | 3.05 | 3.05 | 3.05 | 2.92 |
| Structural shapes | 2.50 | 2.50 | 2.50 | 2.35 |
| Stainless bars (No. 302) | 26.00 | 26.00 | 26.00 | 24.00 |
| Wrought iron bars | 6.15 | 6.15 | 6.15 | 4.76 |

| Wire and Wire Products: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|-------------------------|--------------|-------------|---------------|--------------|
| (cents per pound) | | | | |
| Bright wire | 3.30 | 3.30 | 3.30 | 3.05 |
| Wire nails | 3.75 | 3.75 | 3.75 | 3.25 |

| Rails: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|----------------------|--------------|-------------|---------------|--------------|
| (dollars per 100 lb) | | | | |
| Heavy rails | \$2.50 | \$2.50 | \$2.50 | \$43.39* |
| Light rails | 2.85 | 2.85 | 2.85 | 49.18* |
| *per net ton | | | | |

| Semifinished Steel: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|------------------------------|--------------|-------------|---------------|--------------|
| (dollars per gross ton) | | | | |
| Rerolling billets | \$42.00 | \$42.00 | \$42.00 | \$39.00 |
| Sheet bars | 50.00 | 50.00 | 50.00 | 38.00 |
| Slabs, rerolling | 42.00 | 42.00 | 42.00 | 39.00 |
| Forging billets | 50.00 | 50.00 | 50.00 | 47.00 |
| Alloy blooms, billets, slabs | 61.00 | 61.00 | 61.00 | 58.43 |

| Wire Rods and Skelp: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|----------------------|--------------|-------------|---------------|--------------|
| (cents per pound) | | | | |
| Wire rods | 2.55 | 2.55 | 2.55 | 2.30 |
| Skelp | 2.35 | 2.35 | 2.35 | 2.05 |

| Pig Iron: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|----------------------------|--------------|-------------|---------------|--------------|
| (per gross ton) | | | | |
| No. 2, foundry, Phila. | \$36.51 | \$36.51 | \$36.51 | \$28.34 |
| No. 2, Valley furnace | 33.50 | 33.50 | 33.50 | 26.50 |
| No. 2, Southern, Cin'ti. | 34.75 | 34.75 | 34.75 | 26.94 |
| No. 2, Birmingham | 29.88 | 29.88 | 29.88 | 22.88 |
| No. 2, foundry, Chicago† | 33.00 | 33.00 | 33.00 | 26.50 |
| Basic, del'd eastern Pa... | 36.92 | 36.92 | 36.92 | 27.84 |
| Basic, Valley furnace | 33.00 | 33.00 | 33.00 | 26.00 |
| Malleable, Chicago† | 33.50 | 33.50 | 33.50 | 26.50 |
| Malleable, Valley | 33.50 | 33.50 | 33.50 | 26.50 |
| Charcoal, Chicago | 45.99 | 45.99 | 45.99 | 42.34 |
| Ferromanganese† | 135.00 | 135.00 | 135.00 | 135.00 |

† The switching charge for delivery to foundries in the Chicago district is \$1 per ton.
‡ For carlots at seaboard.

| Scrap: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|------------------------------|--------------|-------------|---------------|--------------|
| (per gross ton) | | | | |
| Heavy melt'g steel, P'gh. | \$29.75 | \$29.75 | \$37.50 | \$20.00 |
| Heavy melt'g steel, Phila. | 29.75 | 29.75 | 33.50 | 18.75 |
| Heavy melt'g steel, Ch'go | 29.25 | 29.75 | 33.25 | 18.75 |
| No. 1, hy. comp. sheet, Det. | 25.00 | 24.75 | 30.75 | 17.32 |
| Low phos. plate, Youngs'n | 35.75 | 36.25 | 39.25 | 22.50 |
| No. 1, cast, Pittsburgh... | 39.50 | 41.50 | 46.00 | 20.00 |
| No. 1, cast, Philadelphia. | 41.00 | 44.50 | 48.00 | 20.00 |
| No. 1, cast, Chicago | 37.25 | 39.50 | 43.50 | 20.00 |

| Coke, Connellsville: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|-----------------------|--------------|-------------|---------------|--------------|
| (per net ton at oven) | | | | |
| Furnace coke, prompt | \$10.50 | \$10.50 | \$9.00 | \$7.50 |
| Foundry coke, prompt | 11.25 | 11.25 | 10.25 | 9.00 |

| Nonferrous Metals: | May 13, 1947 | May 6, 1947 | Apr. 15, 1947 | May 14, 1946 |
|-----------------------------------|--------------|-------------|---------------|--------------|
| (cents per pound to large buyers) | | | | |
| Copper, electro., Conn. | 23.00 | 21.50 | 21.50 | 12.00 |
| Copper, Lake, Conn. | 21.625 | 21.625 | 21.625 | 12.00 |
| Tin, Straits, New York | 80.00 | 80.00 | 80.00 | 52.00 |
| Zinc, East St. Louis | 10.50 | 10.50 | 10.50 | 8.25 |
| Lead, St. Louis | 14.80 | 14.80 | 14.80 | 6.35 |
| Aluminum, virgin | 15.00 | 15.00 | 15.00 | 15.00 |
| Nickel, electrolytic | 37.67 | 37.67 | 37.67 | 35.00 |
| Magnesium, ingot | 20.50 | 20.50 | 20.50 | 20.50 |
| Antimony, Laredo, Tex. | 33.00 | 33.00 | 33.00 | 14.50 |

In accordance with usual practice, THE IRON AGE finished steel composite price has been revised this week, following receipt of first quarter 1947 shipment data. While no price changes have been made since Jan. 7, 1947, the change in the pattern of shipments produces a composite price slightly lower than that of 2.86354¢, the figure used last week which was based on fourth quarter 1946 shipments. Shipment data by American Iron & Steel Institute.

Composite Prices . .

FINISHED STEEL

| | |
|---------------|------------------|
| May 13, 1947 | 2.85664¢ per lb. |
| One week ago | 2.85664¢ per lb. |
| One month ago | 2.85664¢ per lb. |
| One year ago | 2.73011¢ per lb. |

| HIGH | LOW |
|---------------------------|------------------|
| 1947.... 2.85664¢ | 2.85664¢ |
| 1946.... 2.83599¢ Dec. 31 | 2.54490¢ Jan. 1 |
| 1945.... 2.44104¢ Oct. 2 | 2.38444¢ Jan. 2 |
| 1944.... 2.30837¢ Sept. 5 | 2.21189¢ Oct. 5 |
| 1943.... 2.29176¢ | 2.29176¢ |
| 1942.... 2.28249¢ | 2.28249¢ |
| 1941.... 2.43078¢ | 2.43078¢ |
| 1940.... 2.30467¢ Jan. 2 | 2.24107¢ Apr. 16 |
| 1939.... 2.35367¢ Jan. 3 | 2.26689¢ May 16 |
| 1938.... 2.58414¢ Jan. 4 | 2.27207¢ Oct. 18 |
| 1937.... 2.58414¢ Mar. 9 | 2.32263¢ Jan. 4 |
| 1936.... 2.32263¢ Dec. 28 | 2.05200¢ Mar. 10 |
| 1935.... 2.07642¢ Oct. 1 | 2.06492¢ Jan. 8 |
| 1934.... 2.15367¢ Apr. 24 | 1.95757¢ Jan. 2 |
| 1933.... 1.95578¢ Oct. 3 | 1.75836¢ May 2 |
| 1932.... 1.9196¢ July 5 | 1.83901¢ Mar. 1 |
| 1931.... 1.99626¢ Jan. 13 | 1.86586¢ Dec. 29 |
| 1930.... 2.25488¢ Jan. 7 | 1.97319¢ Dec. 9 |
| 1929.... 2.31773¢ May 28 | 2.26498¢ Oct. 29 |

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 23, 1941, issue.

PIG IRON

| |
|---------------------------------|
|\$33.15 per gross ton..... |
|\$33.15 per gross ton..... |
|\$33.15 per gross ton..... |
|\$26.12 per gross ton..... |

| HIGH | LOW |
|-----------------|----------------|
| \$33.15 Mar. 11 | \$30.14 Jan. 7 |
| 30.14 Dec. 10 | 25.37 Jan. 1 |
| 25.37 Oct. 23 | 23.61 Jan. 2 |
| \$23.61 | \$23.61 |
| 23.61 | 23.61 |
| 23.61 | 23.61 |
| \$23.61 Mar. 20 | \$23.45 Jan. 2 |
| 23.45 Dec. 23 | 22.61 Jan. 2 |
| 22.61 Sept. 19 | 20.61 Sept. 12 |
| 23.25 June 21 | 19.61 July 6 |
| 23.25 Mar. 9 | 20.25 Feb. 16 |
| 19.74 Nov. 24 | 18.73 Aug. 11 |
| 18.84 Nov. 5 | 17.83 May 14 |
| 17.90 May 1 | 16.90 Jan. 27 |
| 16.90 Dec. 5 | 13.56 Jan. 3 |
| 14.81 Jan. 5 | 13.56 Dec. 6 |
| 15.90 Jan. 6 | 14.79 Dec. 15 |
| 18.21 Jan. 7 | 15.90 Dec. 16 |
| 18.71 May 14 | 18.21 Dec. 17 |

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

SCRAP STEEL

| |
|---------------------------------|
|\$29.58 per gross ton..... |
|\$29.75 per gross ton..... |
|\$34.75 per gross ton..... |
|\$19.17 per gross ton..... |

| HIGH | LOW |
|-----------------|-----------------|
| \$39.67 Mar. 18 | \$29.58 May 13 |
| 31.17 Dec. 24 | 19.17 Jan. 1 |
| 19.17 Jan. 2 | 18.92 May 22 |
| 19.17 Jan. 11 | 15.76 Oct. 24 |
| \$19.17 | \$19.17 |
| 19.17 | 19.17 |
| \$22.00 Jan. 7 | \$19.17 Apr. 10 |
| 21.83 Dec. 30 | 16.04 Apr. 9 |
| 22.50 Oct. 3 | 14.08 May 16 |
| 15.00 Nov. 22 | 11.00 June 7 |
| 21.92 Mar. 30 | 12.67 June 9 |
| 17.75 Dec. 21 | 12.67 June 8 |
| 13.42 Dec. 10 | 10.33 Apr. 29 |
| 13.00 Mar. 13 | 9.50 Sept. 25 |
| 12.25 Aug. 8 | 6.75 Jan. 3 |
| 8.50 Jan. 12 | 6.43 July 5 |
| 11.33 Jan. 6 | 8.50 Dec. 29 |
| 15.00 Feb. 18 | 11.25 Dec. 9 |
| 17.58 Jan. 29 | 14.08 Dec. 8 |

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

NO PRIVACY *for* FLAWS

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When Tools are INSPECTED with **MAGNAFLUX*** or **ZYGLO***

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Such flaws have no privacy in tools inspected with Magnaflux or Zyglo. They're exposed vividly, quickly and economically. To *manufacturers* of all types of tools, non-destructive inspec-

tion of magnetic metals with Magnaflux and inspection of all metals—magnetic or non-magnetic—with Zyglo provide conclusive pre-proof of quality. To all *users* of tools they provide a thorough check on new tools when accepted and then after each regrinding. To *both* they provide assurance of lower tool costs and lower losses from scrap. Write for full information today.

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MAGNAFLUX CORPORATION
5902 Northwest Highway, Chicago 31, Illinois
NEW YORK • DETROIT • DALLAS • LOS ANGELES • CLEVELAND

THE IRON AGE, May 15, 1947—119

Iron and Steel Prices...

Steel prices shown here are f.o.b. basing points in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. (8) Also shafting. For quantities of 20,000 lb to 89,999 lb. (9) Carload lot in manufacturing trade. (10) This base price for annealed, bright finish wire, commercial spring wire. (11) Boxed. (12) Produced to dimensional tolerances in AISI Manual Sec. 6 (13) Delivered San Francisco only: Includes 3 pct freight tax. (14) Delivered Kaiser Co. prices: includes 3 pct freight tax. (15) 0.035 to 0.075 in. thick by ¾ to 3½ in. wide. (16) Some producers are charging 2.75¢. (17) Delivered Los Angeles; add ¼¢ per 100 lb for San Francisco. (18) Delivered Los Angeles only. (19) Fabricated.

| Basing Points * | Pitts- burgh | Chicago | Gary | Cleve- land | Bir- mingham | Buffalo | Youngs- town | Spar- rows Point | Granite City | Middle- town, Ohio | San Francisco, Los Angeles, Seattle | DELIVERED TO | | |
|---|-----------------|---------|---------|---------------------|-----------------|---------|-----------------|------------------------|-----------------|---|---|--------------|-----------------------|-------------------|
| | | | | | | | | | | | | Detroit | New York | Phila- delphia |
| INGOTS | | | | | | | | | | | | | | |
| Carbon, rerolling | | | | | | | | | | | | | | |
| Carbon, forging | \$40.00 | \$40.00 | \$40.00 | \$40.00 | \$40.00 | \$40.00 | \$40.00 | | | | | | | |
| Alloy | \$52.00 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| BILLETS, BLOOMS, SLABS | | | | | | | | | | | | | | |
| Carbon, rerolling | \$42.00 | \$42.00 | \$42.00 | \$42.00 | \$42.00 | \$42.00 | \$42.00 | \$42.00 | | | | | \$45.00 | |
| Carbon, forging billets | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | | | | | \$53.00 | |
| Alloy | \$61.00 | \$61.00 | | | | \$61.00 | | | | | | | \$64.00 | |
| SHEET BARS | | | | | | | \$53.00 | | | Portsmouth, Ohio = \$67.20 | | | | |
| PIPE SKELP | 2.35¢ | 2.35¢ | | | | | 2.35¢ | 2.35¢ | | (Coatesville = 2.35¢) | | | | |
| WIRE RODS | 2.55¢ | 2.55¢ | | 2.55¢ | 2.55¢ | | | | | (Worcester = 2.65¢) | 3.27¢ ¹³ | | | |
| SHEETS | | | | | | | | | | | | | | |
| Hot-rolled | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ | 2.875¢ | 2.50¢ | 3.24¢ ¹⁷ | 2.65¢ | 2.79¢ | 2.70¢ |
| Cold-rolled ¹ | 3.20¢ | 3.20¢ | 3.20¢ | 3.20¢ | | 3.20¢ | 3.20¢ | | 3.30¢ | | | 3.35¢ | 3.61¢ | 3.58¢ |
| Galvanized (10 gage) | 3.55¢ | 3.55¢ | 3.55¢ | | 3.55¢ | | 3.55¢ | 3.55¢ | 3.65¢ | | 4.32¢ ¹⁷ | | 3.84¢ | 3.75¢ |
| Enameling (12 gage) | 3.55¢ | 3.55¢ | 3.55¢ | 3.55¢ | | | 3.55¢ | | 3.65¢ | | | 3.70¢ | 3.95¢ | 3.93¢ |
| Long ternes ² (10 gage) | 3.55¢ | 3.55¢ | 3.55¢ | | | | | | | | | | 3.95¢ | 3.91¢ |
| STRIP | | | | | | | | | | | | | | |
| Hot-rolled ³ | 2.50¢ | 2.50¢ | 2.50¢ | 2.50¢ ¹⁸ | 2.50¢ | | 2.50¢ | | | | | 2.65¢ | 2.93¢ | 2.88¢ |
| Cold-rolled ⁴ | 3.20¢ | 3.30¢ | | 3.20¢ | | | 3.20¢ | | | (Worcester = 3.40¢) | | 3.35¢ | 3.61¢ | 3.58¢ |
| Cooperage stock | 2.80¢ | 2.80¢ | | | 2.80¢ | | 2.80¢ | | | | | | 3.09¢ | |
| TINPLATE | | | | | | | | | | | | | | |
| Standard cokes, base box | \$5.75 | \$5.75 | \$5.75 | | \$5.85 | | | \$5.85 | \$5.85 | | (Warren, Ohio = \$5.75) | \$6.157 | \$6.062 ¹¹ | |
| Electro, box ⁵ | | | | | | | | | | | | | | |
| 0.25 lb. | | | | | | | | | | | | | | |
| 0.50 lb. | | | | | | | | | | | | | | |
| 0.75 lb. | | | | | | | | | | | | | | |
| BLACKPLATE, 29 gage ⁶ | 3.60¢ | 3.60¢ | 3.60¢ | | 3.70¢ | | | 3.70¢ | 3.70¢ | | (Warren, Ohio = \$5.75) | 3.98¢ | 3.90¢ | |
| BLACKPLATE, CANMAKING | | | | | | | | | | | | | | |
| 55 lb. to 70 lb. | | | | | | | | | | | | | | |
| 75 lb. to 95 lb. | | | | | | | | | | | | | | |
| 100 lb. to 118 lb. | | | | | | | | | | | | | | |
| TERNES, MFG., Special coated | | | | | | | | | | | | | | |
| BARS | | | | | | | | | | | | | | |
| Carbon steel | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | | | | 3.285¢ | 2.75¢ | 3.01¢ | 2.98¢ |
| Rail steel ^{6, 19} | 2.95¢ | 2.95¢ | 2.95¢ | 2.95¢ | 2.95¢ | 2.95¢ | 2.95¢ | | | | | | | |
| Reinforcing (billet) ⁷ | 2.45¢ | 2.45¢ | 2.45¢ | 2.45¢ | 2.45¢ | 2.45¢ | 2.45¢ | 2.45¢ | | | 2.985¢ | | 2.74¢ | 2.65¢ |
| Reinforcing (rail) ^{7, 10} | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | 2.60¢ | | | | | | | |
| Cold-finished ⁸ | 3.20¢ | 3.20¢ | 3.20¢ | 3.20¢ | | 3.20¢ | | | | | | 3.35¢ | 3.61¢ | 3.58¢ |
| Alloy, hot-rolled | 3.05¢ | 3.05¢ | | | | 3.05¢ | 3.05¢ | | | (Bethlehem, Massillon, Canton = 3.05¢) | | 3.20¢ | | 3.19¢ |
| Alloy, cold-drawn | 3.80¢ | 3.80¢ | 3.80¢ | 3.80¢ | | 3.80¢ | | | | | | 3.95¢ | | |
| PLATE | | | | | | | | | | | | | | |
| Carbon steel ¹² | 2.65¢ | 2.65¢ | 2.65¢ | 2.65¢ | 2.65¢ | | 2.65¢ | | | (Coatesville, Claymont = 2.80¢, Geneva, Utah = 2.80¢) | 3.46¢ ¹⁴ | | 2.87¢ | 2.85¢ |
| Floor plates | 3.90¢ | 3.90¢ | | | | | | | | | | | 4.30¢ | 4.28¢ |
| Alloy | 3.79¢ | 3.79¢ | | | | | | | | (Coatesville = 4.10¢) | | | 4.01¢ | 3.895¢ |
| SHAPES, Structural | 2.50¢ | 2.50¢ | 2.50¢ | | 2.50¢ | 2.50¢ | | | | (Geneva, Utah = 2.65¢) (Bethlehem = 2.60¢) | 3.17¢ ¹⁴ | | 2.70¢ | 2.64¢ |
| SPRING STEEL, C-R | | | | | | | | | | | | | | |
| 0.26 to 0.40 carbon | 3.20¢ | | | 3.20¢ | | | | | | (Worcester = 3.40¢) | | | | |
| 0.41 to 0.60 carbon | 4.70¢ | | | 4.70¢ | | | | | | (Worcester = 4.90¢) | | | | |
| 0.61 to 0.80 carbon | 5.30¢ | | | 5.30¢ | | | | | | (Worcester = 5.50¢) | | | | |
| 0.81 to 1.00 carbon | 6.80¢ | | | 6.80¢ | | | | | | (Worcester = 7.00¢) | | | | |
| Over 1.00 carbon | 9.10¢ | | | 9.10¢ | | | | | | (Worcester = 9.30¢) | | | | |
| MANUFACTURERS' WIRE ⁹ | | | | | | | | | | | | | | |
| Bright ¹⁰ | 3.30¢ | 3.30¢ | | 3.30¢ | 3.30¢ | | | | | (Worcester = 3.40¢, Duluth = 3.35¢) | 5.63¢ ¹³ | | 3.71¢ | 3.68¢ |
| Galvanized | | | | | | | | | | Add proper size extra and galvanizing extra to Bright Wire Base | | | | |
| Spring (high carbon) | 4.25¢ | 4.25¢ | | 4.25¢ | | | | | | (Worcester = 4.35¢, Duluth = 4.50¢) (Trenton = 4.50¢) | 5.24¢ ¹³ | | 4.68¢ | 4.595¢ |
| PILING, Steel sheet | 3.00¢ | 3.00¢ | | | | 3.00¢ | | | | | | | 3.41¢ | 3.36¢ |

PRICES

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

| Basing Point | Chromium Nickel | | Straight Chromium | | | |
|--|------------------------|---------|-------------------|------------------------|---------|---------|
| | No. 304 | No. 302 | No. 410 | No. 430 | No. 442 | No. 448 |
| Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila. | Subject to negotiation | 22.99 | 17.01 | Subject to negotiation | 20.69 | 25.29 |
| Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt. | 22.99 | 24.67 | 17.01 | 17.47 | 20.69 | 25.29 |
| Slabs, P'gh, Chi, Canton, Balt, Phila, Reading | Subject to negotiation | 22.99 | 17.01 | Subject to negotiation | 20.69 | 25.29 |
| Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt. | 23.00 | 22.50 | 17.50 | 17.50 | 21.00 | 25.50 |
| Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville | 27.50 | 26.00 | 20.50 | 21.00 | 24.50 | 30.00 |
| Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville | 27.50 | 26.00 | 20.50 | 21.00 | 24.50 | 30.00 |
| Bars, c-r, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet | 31.50 | 29.50 | 23.50 | 24.00 | 28.00 | 33.00 |
| Plates, P'gh, Middletown, Canton | 27.50 | 26.00 | 20.50 | 21.00 | 24.50 | 30.00 |
| Shapes, structural, P'gh, Chi | 27.50 | 26.00 | 20.50 | 21.00 | 24.50 | 30.00 |
| Sheets, P'gh, Chi, Middletown, Canton, Balt. | 39.00 | 37.00 | 29.00 | 31.50 | 35.50 | 39.50 |
| Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown | 25.50 | 23.50 | 18.50 | 19.00 | 22.00 | 28.00 |
| Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown | 32.50 | 30.50 | 24.00 | 24.50 | 28.00 | 33.00 |
| Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila., Ft. Wayne | 27.50 | 26.00 | 20.50 | 21.00 | 24.50 | 30.00 |
| Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton | 32.48 | 30.30 | 23.80 | 24.34 | 28.62 | 33.28 |
| Rod, h-r, Syracuse | 27.05 | 25.97 | 20.02 | 20.58 | 24.34 | 29.75 |
| Tubing, seamless, P'gh, Chi, Canton, (4 to 8 in.) | 72.09 | 72.09 | ..... | 68.48 | ..... | ..... |

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, Ohio)

| W | Cr | V | Mo | Base per lb |
|-----|----|-----|----|-------------|
| 18 | 4 | 1 | — | 74¢ |
| 1.5 | 4 | 1.5 | 8 | 59¢ |
| 6 | 4 | 2 | 6 | 63¢ |

High-carbon-chromium* 47¢
Oil hardening manganese* 26¢
Special carbon* 24¢
Extra carbon* 20¢
Regular carbon* 16¢
Warehouse prices on and east of Mississippi are 2¢ per lb. higher; west of Mississippi, 4¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

| | Per lb |
|----------------|--------|
| Field grade | 4.20¢ |
| Armature | 4.50¢ |
| Electrical | 5.00¢ |
| Motor | 5.75¢ |
| Dynamo | 6.45¢ |
| Transformer 72 | 6.95¢ |
| Transformer 65 | 7.65¢ |
| Transformer 58 | 8.35¢ |
| Transformer 52 | 9.15¢ |

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

| | |
|---|--------|
| Standard rails, heavier than 60 lb | |
| No. 1 O.H., per 100 lb. | \$2.50 |
| Angle splice bars, 100 lb. | 3.00 |
| (F.o.b. basing points) per 100 lb | |
| Light rails (from billets) | \$2.85 |
| Light rails (from rail steel), f.o.b. Williamsport, Pa. | 2.95 |

Base per lb

| | |
|--|-------|
| Cut spikes | 4.50¢ |
| Screw spikes | 6.40¢ |
| Tie plate, steel | 2.80¢ |
| Tie plates, Pacific Coast | 2.95¢ |
| Track bolts | 6.50¢ |
| Track bolts, heat treated, to rail roads | 6.75¢ |
| Track bolts, jobbers discount | 63-5 |

Basing points, light rails, Pittsburgh, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, add 25¢.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

| | | |
|-------------------|-----------|-----------|
| | 20x14 in. | 20x28 in. |
| 8-lb coating I.C. | \$6.75 | \$13.50 |

CLAD STEEL

Base prices, cents per pound

| Stainless-clad | Plate | Sheet |
|--|--------|--------|
| No. 304, 20 pct. f.o.b. Pittsburgh, Washington, Coatesville, Pa. | *24.00 | *22.00 |
| Nickel-clad | | |
| 10 pct. f.o.b. Coatesville, Pa. | 21.50 | ..... |
| Inconel-clad | | |
| 10 pct. f.o.b. Coatesville.. | 30.00 | ..... |
| Monel-clad | | |
| 10 pct. f.o.b. Coatesville.. | 29.00 | ..... |
| Aluminized steel | | |
| Hot dip, 20 gage, f.o.b. Pittsburgh | 9.00 | ..... |

*Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

Base Delivered per San keg Francisco

| | | |
|---------------------------------------|---------|--------|
| Standard, galvanized and coated nails | \$3.75† | \$4.83 |
| Cut nails, carloads, Pittsburgh base | 5.30 | ..... |

†10¢ additional at Cleveland, 30¢ at Worcester.

| | | |
|-------------------------------|-----------------|--------|
| Annealed fence wire | Base per 100 lb | \$4.96 |
| Annealed galv. fence wire | \$3.95† | 4.41 |
| †10¢ additional at Worcester. | | |

To the dealer f.o.b. Pittsburgh, Chicago, Birmingham

| | Base column |
|--------------------------|-------------|
| Woven wire fence* | 84 107 |
| Fence posts, carloads | 90†† |
| Single loop bale ties | 86 110 |
| Galvanized barbed wire** | 94 114 |
| Twisted barbed wire | 94 |

* 15½ gage and heavier. ** On 80-rod spools in carload quantities. †† Pittsburgh, Duluth.

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

| Steel | Aldo-cer | Corten | Double Strength No. 1 | Dyn-a-loy | Hi Steel | Mayar R | Ota-cloy | Yaloy | Y-50 | NAX High Tensile |
|-----------------|-----------|-----------------------------|-----------------------|-----------|----------|------------|------------------|--------------------------|------------------------|-------------------|
| Producer | Repub-lic | Carnegie-Illinois, Republic | Repub-lic | Alan Wood | Infand | Bethle-hem | Jones & Laughlin | Youngs-town Sheet & Tube | Amer-ican Rolling Mill | Great Lakes Steel |
| Plates..... | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 | 4.10 | .... | 4.10 |
| Sheets | | | | | | | | | | |
| Hot-rolled... | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | .... | 3.75 |
| Cold-rolled... | 4.75 | 4.75 | 4.75 | .... | 4.75 | 4.75 | 4.75 | 4.75 | 5.225* | 4.55 |
| Galvanized... | .... | 5.40 | .... | .... | .... | 5.40 | .... | .... | .... | .... |
| Strip | | | | | | | | | | |
| Hot-rolled... | 3.85 | 3.85 | 3.85 | .... | 3.85 | 3.85 | 3.85 | 3.85 | .... | 3.75 |
| Cold-rolled... | .... | .... | 4.75 | .... | .... | 4.75 | 4.75 | 4.75 | 5.00* | 4.55† |
| Shapes..... | .... | 3.85 | .... | .... | 3.85 | 3.85 | 3.85 | 3.85 | .... | .... |
| Beams..... | .... | 3.85 | .... | .... | .... | 3.85 | .... | .... | .... | .... |
| Bars | | | | | | | | | | |
| Hot-rolled... | 4.00 | 4.00 | 4.00 | .... | .... | 4.00 | 4.00 | 4.00 | .... | 4.00 |
| Cold-rolled... | .... | .... | .... | .... | .... | .... | .... | 4.60 | .... | .... |
| Bar shapes..... | .... | 4.00 | .... | .... | 4.00 | 4.00 | 4.00 | 4.00 | .... | .... |

* 21 gage and lighter. † Pittsburgh, add 0.10¢ at Chicago and Gary.

PRICES

PIPE AND TUBING

Base discounts. F.o.b. Pittsburgh and Lorain, steel butt weld and seamless. Others f.o.b. Pittsburgh only

Base price, \$200.00 per net ton

Standard, threaded & coupled

| Steel, butt weld | Black | Galv. |
|-------------------------|--------|--------|
| 1/2-in. | 55 1/2 | 41 |
| 3/4-in. | 58 1/2 | 45 |
| 1 to 3-in. | 60 1/2 | 47 1/2 |
| Wrought Iron, butt weld | | |
| 1/2-in. | 2 | +20 |
| 3/4-in. | 11 1/2 | +10 |
| 1 and 1 1/4-in. | 17 | +2 |
| 1 1/2-in. | 22 1/2 | 1 1/2 |
| 2-in. | 23 | 2 |

| Steel, lap weld | | |
|----------------------|----|--------|
| 2-in. | 53 | 39 1/2 |
| 2 1/2 and 3-in. | 56 | 42 1/2 |
| 3 1/2 to 6-in. | 58 | 44 1/2 |

| Steel, seamless | | |
|----------------------|----|--------|
| 2-in. | 52 | 38 1/2 |
| 2 1/2 and 3-in. | 55 | 41 1/2 |
| 3 1/2 to 6-in. | 57 | 43 1/2 |

| Wrought Iron, lap weld | | |
|-------------------------|--------|--------|
| 2-in. | 14 1/2 | +5 1/2 |
| 2 1/2 to 3 1/2-in. | 17 | +1 1/2 |
| 4-in. | 21 | 4 |
| 4 1/2 to 8-in. | 19 | 2 1/2 |

Extra Strong, plain ends

| Steel, butt weld | | |
|------------------|--------|--------|
| 1/2-in. | 54 1/2 | 41 1/2 |
| 3/4-in. | 57 1/2 | 45 1/2 |
| 1 to 3-in. | 60 | 48 |

| Wrought Iron, butt weld | | |
|-------------------------|--------|-----|
| 1/2-in. | 6 1/2 | +14 |
| 3/4-in. | 12 1/2 | +8 |
| 1 to 2-in. | 22 | 2 |

| Steel, lap weld | | |
|----------------------|--------|--------|
| 2-in. | 52 | 39 1/2 |
| 2 1/2 and 3-in. | 56 | 43 1/2 |
| 3 1/2 to 6-in. | 59 1/2 | 47 |

| Steel, seamless | | |
|----------------------|--------|--------|
| 2-in. | 51 | 38 1/2 |
| 2 1/2 and 3-in. | 55 | 42 1/2 |
| 3 1/2 to 6-in. | 58 1/2 | 46 |

| Wrought Iron, lap weld | | |
|------------------------|--------|-------|
| 2-in. | 17 1/2 | +2 |
| 2 1/2 to 4-in. | 26 | 8 1/2 |
| 4 1/2 to 6-in. | 22 | 4 |

Basing discounts for standard pipe are for threads and couplings. For threads only, butt weld, lap weld and seamless pipe, one point higher discount (lower price) applies. For plain ends, butt weld, lap weld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lap weld and seamless 3 1/2-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all butt weld. On butt weld and lap weld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, out length 4 to 24 ft, inclusive.

| O.D. Gage | Hot- Rolled | Cold- Drawn | Electric Weld Hot- Rolled | Electric Weld Cold- Drawn |
|-----------|-------------|-------------|---------------------------|---------------------------|
| 1 in. BWG | 15.29 | 18.17 | 15.00 | 17.95 |
| 2 1/2 | 20.57 | 24.43 | 20.11 | 24.07 |
| 3 | 22.87 | 27.18 | 22.26 | 26.68 |
| 3 1/2 | 28.86 | 34.30 | 28.06 | 33.64 |
| 4 | 35.82 | 42.55 | 34.78 | 41.68 |

CAST IRON WATER PIPE

| | Per net ton |
|---|-------------|
| 6-in. to 24-in. del'd Chicago | \$81.56 |
| 6-in. to 24-in. del'd New York | 79.80 |
| 6-in. to 24-in., Birmingham | 71.00 |
| 6-in. and larger, f.o.b. cars, San Francisco, Los Angeles for all rail shipment; rail and water shipment less | 95.00 |
| Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in. | |

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

| | Percent Off List |
|--------------------------------------|------------------|
| 1/2 in. & smaller x 6 in. & shorter | 55 |
| Over 6 in. | 45 |
| 9/16 & 5/8 in. x 6 in. & shorter | 52 |
| 9/16 through 1 in. x over 6 in. | 48 |
| 7/8 & 1 in. x in. and shorter | 51 |
| 1/2 in. x 6 in. & shorter | 49 |
| 1 1/2 in. and larger, all lengths | 48 |
| Lag, all diam over 6 in. long | 48 |
| Lag, all diam x 6 in. & shorter | 50 |
| Plow bolts | 57 |

Nuts, Cold Punched or Hot Pressed (Hexagon or Square)

| | |
|------------------------------|----|
| 1/2 in. and smaller | 48 |
| 9/16 to 1 in. inclusive | 47 |
| 1 1/2 to 1 1/2 in. inclusive | 45 |
| 1 1/2 in. and larger | 44 |

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts U.S.S. S.A.E.

Base discount less case lots

| | U.S.S. | S.A.E. |
|-----------------------------|--------|--------|
| 7/16 in. and smaller | 51 | |
| 1/2 in. and smaller | 48 | |
| 1/2 in. through 1 in. | 48 | |
| 9/16 in. through 1 in. | 47 | |
| 1 1/2 in. through 1 1/2 in. | 46 | |
| 1 1/2 in. and larger | 44 | |

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

Consumer

| | |
|-------------------------|-----------|
| Packages, nuts separate | 60 and 10 |
| In bulk | 74 |

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets (1/2 in. and larger)

| | Base per 100 Lb |
|---|-----------------|
| F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham | \$5.25 |
| F.o.b. Lebanon, Pa. | 5.40 |

Small Rivets (7/16 in. and smaller)

| | Percent Off List |
|---|------------------|
| F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham | 55 and 5 |

Cap and Set Screws

(In packages) Consumer

| | Percent Off List |
|---|------------------|
| Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright | 56 |
| 1/2 to 1 in. x 6 in., SAE 1035, heat treated | 47 |
| Set screws, cup and oval points | 61 |
| Milled studs | 33 |
| Flat head cap screws, listed sizes | 21 |
| Fillister head cap, listed sizes | 40 |

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Metallurgical grade, f.o.b. producing plant.

| | Base price per short ton |
|-------------------------------------|--------------------------|
| Effective CaF ₂ Content: | |
| 70% or more | \$33.00 |
| 65% but less than 70% | 32.00 |
| 60% but less than 65% | 31.00 |
| Less than 60% | 30.00 |

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

| | Per Gross Ton |
|--|---------------|
| Old range, bessemer | \$5.95 |
| Old range, non-bessemer | 5.80 |
| Mesabi, bessemer | 5.70 |
| Mesabi, non-bessemer | 5.55 |
| High phosphorus | 5.55 |
| Prices quoted retroactive to Jan. 1, 1947. | |

METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

| | |
|---|------------------|
| Brass, minus 100 mesh | 23¢ to 27¢ |
| Copper, electrolytic, 100 and 325 mesh | 30¢ to 31 1/2¢ |
| Copper, reduced, 150 and 200 mesh | 29¢ to 30 1/2¢ |
| Iron, commercial, 100, 200, 325, mesh 96 + % Fe | 11¢ to 16¢ |
| Swedish sponge iron, 100 mesh, c.i.f. N. Y., carlots, ocean bags | 7.4¢ to 8.5¢ |
| Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots | 5¢ |
| Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots | 66¢ |
| Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe | 25¢ to 31¢ |
| Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe | 17¢ |
| Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe | .90¢ to \$1.75 |
| Aluminum, 100, 200 mesh, carlots | 23¢ to 26¢ |
| Antimony, 100 mesh | 36.05¢ |
| Cadmium, 100 mesh | \$2.00 |
| Chromium, 100 mesh and finer | \$1.025 |
| Lead, 100, 200 & 300 mesh | 18.50¢ to 23.50¢ |
| Manganese, minus 325 mesh and coarser | 33¢ |
| Nickel, 150 mesh | 51 1/4¢ |
| Silicon, 100 mesh | 18.15¢ |
| Solder powder, 100 mesh, 1/2¢ plus metal | |
| Tin, 100 mesh | 90¢ |
| Tungsten metal powder, 98%-99%, any quantity, per lb. | \$2.90 |
| Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb. | \$2.65 |
| Under 100 lb | \$2.90 |

COKE

| | Net Ton |
|--------------------------------|--------------------|
| Furnace, beehive (f.o.b. oven) | |
| Connellsville, Pa. | \$10.00 to \$11.00 |

| | Net Ton |
|--------------------------------|----------------|
| Foundry, beehive (f.o.b. oven) | |
| Connellsville, Pa. | 11.00 to 12.00 |

| | Net Ton |
|----------------------------------|---------|
| Foundry, Byproduct | |
| Chicago, del'd | \$16.10 |
| Chicago, f.o.b. | 15.10 |
| New England, del'd | 17.25 |
| Seaboard, Kearney, N. J., f.o.b. | 15.35 |
| Philadelphia, del'd | 15.46 |
| Buffalo, del'd | 16.14 |
| Ashland, Ohio, f.o.b. | 13.35 |
| Painesville, Ohio, f.o.b. | 14.60 |
| Erie, del'd | 15.75 |
| Cleveland, del'd | 15.90 |
| Cincinnati, del'd | 15.39 |
| St. Louis, del'd | 15.85 |
| Birmingham, del'd | 13.25 |

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

| | Carloads, Per 1000 |
|-----------------------------------|--------------------|
| First quality, Ohio | \$64.00 |
| First quality, Pa., Md., Ky., Mo. | 70.00 |
| First quality, New Jersey | 75.00 |
| Sec. quality, Pa., Md., Ky., Mo. | 64.00 |
| Sec. quality, New Jersey | 59.00 |
| Sec. quality, Ohio | 56.00 |
| Ground fire clay, net ton, bulk | 10.00 |

Silica Brick

| | |
|----------------------------------|---------|
| Pennsylvania and Birmingham | \$70.00 |
| Chicago District | 79.00 |
| Silica cement, net ton (Eastern) | 12.00 |
| Chicago | 13.50 |

Chrome Brick

| | Per Net Ton |
|--|-------------|
| Standard chemically bonded, Balt., Plymouth Meeting, Chester | \$59.00 |

Magnesite Brick

| | |
|------------------------------|---------|
| Standard, Balt. and Chester | \$81.00 |
| Chemically bonded, Baltimore | 70.00 |

Grain Magnesite

| | Per Net Ton |
|--|-------------|
| Domestic, f.o.b. Balt. and Chester in sacks | \$44.50 |
| Domestic, f.o.b. Chewelah, Wash., in bulk | 24.00 |
| in sacks | 28.00 |
| Clinker (dead burned) dolomite, bulk, per net ton, f.o.b. Billmeyer, Pa., Millersville, O. | 10.55 |
| Midwest, add 10¢; Mo. Valley, add 20¢ | |

PRICES

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

| CITIES | SHEETS | | | STRIP | | Plates | Standard Structural Shapes | BARS | | ALLOY BARS | | | |
|---------------------|----------------------|-----------------------|----------------------|--------------------|-------------------|--------------------|----------------------------|---------------------|--------------------|------------------------------|----------------------------|------------------------------|----------------------------|
| | Hot-Rolled (10 gage) | Cold-Rolled (15 gage) | Galvanized (10 gage) | Hot-Rolled | Cold-Rolled | | | Hot-Rolled | Cold-Finished | Hot-Rolled, A 4615 As-rolled | Hot-Rolled, A 4140-50 Ann. | Cold-Drawn, A 4615 As-rolled | Cold-Drawn, A 4140-50 Ann. |
| Philadelphia..... | \$4.24 | \$5.18 | \$5.29 | \$4.43 | \$5.28 | \$4.54 | \$4.22 | \$4.48 | \$5.38 | \$8.37 | \$8.37 | \$9.88 | \$9.88 |
| New York..... | 4.42 | 5.17 ¹ | 5.47 | 4.62 | 5.40 | 4.72 | 4.37 | 4.62 | 5.42 | 8.42 | 8.42 | 9.92 | 9.92 |
| Boston..... | 4.50 | 5.12 ¹ | 5.55 ¹ | 4.65 | 5.35 ⁶ | 4.80 | 4.47 | 4.62 | 5.48 | 8.62 | 8.62 | 9.97 | 9.97 |
| Baltimore..... | 4.09 | ..... | 5.14 | 4.40 | ..... | 4.39 | 4.34 | 4.45 | 5.35 | ..... | ..... | ..... | ..... |
| Norfolk..... | 4.35 | ..... | ..... | ..... | ..... | 4.50 | 4.50 | 4.75 | 5.50 | ..... | ..... | ..... | ..... |
| Chicago..... | 3.85 | ..... | ..... | 4.05 | 5.05 | 4.25 | 4.10 | 4.10 | 4.75 | 8.10 | 8.10 | 9.35 | 9.35 |
| Milwaukee..... | 4.199 | 4.799 | 5.249 | 4.199 | ..... | 4.499 | 4.249 | 4.249 | 5.149 | 8.399 | 8.399 | 9.649 | 9.649 |
| Cleveland..... | 4.00 | 4.60 | 5.238 | 4.188 | 4.85 | 4.30 ¹ | 4.311 | 4.05 | 4.95 | 8.358 | 8.358 | 9.35 | 9.35 |
| Buffalo..... | 4.05 | 4.85 | 5.35 | 4.30 | 5.25 | 4.55 | 4.10 | 4.10 | 4.75 | 8.10 | 8.10 | 9.35 | 9.35 |
| Detroit..... | 4.15 | 4.75 | 5.42 | 4.34 | 5.24 | 4.58 ¹ | 4.42 | 4.20 | 5.12 | 8.51 | 8.51 | 9.74 | 9.74 |
| Cincinnati..... | 4.116 | 4.716 | 5.166 | ..... | ..... | 4.803 | 4.444 | 4.403 | 5.303 | ..... | ..... | ..... | ..... |
| St. Louis..... | 4.199 | 4.799 | 5.424 | 4.199 | 5.424 | 4.499 | 4.249 | 4.249 | 5.324 | 8.574 | 8.574 | 9.824 | 9.824 |
| Pittsburgh..... | 4.00 | 4.60 ¹ | 5.05 | 4.00 | 4.95 | 4.30 | 4.05 | 4.05 | 4.95 | 8.10 | 8.10 | 9.35 | 9.35 |
| St. Paul..... | 4.384 ⁷ | 5.034 ¹ | 5.434 ² | 4.404 ⁷ | ..... | 4.684 ⁷ | 4.434 ⁷ | 4.434 ⁷ | 5.726 ⁸ | ..... | 10.084 ⁴ | ..... | 11.726 ⁸ |
| Duluth..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Omaha..... | 4.868 | 6.618 ¹ | 5.918 | 4.868 | ..... | 5.168 | 4.918 | 4.918 | 5.818 | ..... | ..... | ..... | ..... |
| Indianapolis..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Birmingham..... | 3.85 ¹¹ | ..... | 5.20 | 4.06 ¹¹ | ..... | 4.30 ¹¹ | 4.05 ¹¹ | 4.05 ¹¹ | 5.83 | ..... | ..... | ..... | ..... |
| Memphis..... | 4.47 | ..... | 5.97 | 4.72 | ..... | 4.92 | 4.67 | 4.67 | 5.78 | ..... | ..... | ..... | ..... |
| New Orleans..... | *4.48 ¹¹ | 5.77 ¹ | ..... | ..... | ..... | 4.83 ¹¹ | *4.68 ¹¹ | *4.78 ¹¹ | 6.14 | ..... | ..... | ..... | ..... |
| Los Angeles..... | 5.35 | 7.00 ¹ | 6.70 | 5.85 | 8.36 ⁵ | 5.20 ¹² | 5.20 ¹² | 5.10 ¹³ | 6.80 ¹⁴ | 9.65 ¹⁰ | 9.38 | 11.08 | 11.08 |
| San Francisco..... | 4.90 ⁸ | 6.30 ⁹ | 6.45 | 5.29 ⁸ | ..... | 5.00 ⁸ | 4.90 ⁸ | 4.75 ⁸ | 7.00 ¹⁰ | ..... | ..... | ..... | ..... |
| Seattle..... | 5.00 | 7.80 | 6.30 | 5.30 ³ | ..... | 5.25 ⁴ | 4.95 ⁴ | 5.00 ⁴ | 7.10 | ..... | ..... | ..... | ..... |
| Portland..... | 5.00 ³ | ..... | 6.25 ⁹ | 5.50 ³ | ..... | 5.40 ³ | 5.10 ³ | 5.10 ³ | 7.20 | ..... | 9.30 | ..... | ..... |
| Salt Lake City..... | 6.25 | ..... | 7.71 | 6.50 | ..... | 6.10 | 6.25 | 6.25 | 7.50 ¹⁰ | ..... | ..... | ..... | ..... |

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb;

strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 lb and over.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 10,000 lb; (5) 2000 lb and over; (6) 1000 lb

and over; (7) 400 to 14,999; (8) 400 lb and over; (9) 450 to 1499; (10) 500 to 999; (11) 400 to 3999; (12) 450 to 8749; (13) 400 to 1999; (14) 1500 and over.

* Add 46¢ for sizes not rolled in Birmingham.

† Up to ¾ in. thick and 90 in. wide.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums.

| BASING POINT PRICES | | | | | | DELIVERED PRICES (BASE GRADES) | | | | | | | |
|----------------------|-------|---------------|-----------|----------|-----------|--------------------------------|-------------------------|--------------|-------|---------------|-----------|----------|-----------|
| Basing Point | Basic | No. 2 Foundry | Malleable | Bessemer | Low Phos. | Consuming Point | Basing Point | Freight Rate | Basic | No. 2 Foundry | Malleable | Bessemer | Low Phos. |
| Bethlehem..... | 34.00 | 34.50 | 35.00 | 35.50 | ..... | Boston..... | Everett..... | \$0.50 Arb. | 29.50 | 30.00 | 30.50 | 31.00 | ..... |
| Birdsboro..... | 34.00 | 34.50 | 35.00 | 35.50 | 39.00 | Boston..... | Birdsboro-Steelton..... | 4.82 | ..... | ..... | ..... | ..... | 43.82 |
| Birmingham..... | 29.38 | 29.68 | ..... | ..... | ..... | Brooklyn..... | Bethlehem..... | 3.00 | 37.00 | 37.50 | 38.00 | 38.50 | ..... |
| Buffalo..... | 32.50 | 33.00 | 33.50 | 34.00 | ..... | Brooklyn..... | Birdsboro..... | 3.50 | ..... | ..... | ..... | ..... | 42.50 |
| Chicago..... | 32.50 | 33.00 | 33.50 | 34.00 | ..... | Cincinnati..... | Birmingham..... | 4.87 | 34.25 | 34.75 | ..... | ..... | ..... |
| Cleveland..... | 32.50 | 33.00 | 33.50 | 34.00 | ..... | Jersey City..... | Bethlehem..... | 1.84 | 35.84 | 36.34 | 36.84 | 37.34 | ..... |
| Duluth..... | 33.00 | 33.50 | 34.00 | 34.50 | ..... | Jersey City..... | Birdsboro..... | 2.33 | ..... | ..... | ..... | ..... | 41.33 |
| Erie..... | 32.50 | 33.00 | 33.50 | 34.00 | ..... | Los Angeles..... | Provo..... | 5.94 | 38.94 | 39.44 | ..... | ..... | ..... |
| Everett..... | 29.00 | 29.50 | 30.00 | 30.50 | ..... | Maneifeld..... | Cleveland-Toledo..... | 2.33 | 34.83 | 35.33 | 35.83 | 36.33 | ..... |
| Granite City..... | 32.50 | 33.50 | 33.50 | 34.00 | ..... | Philadelphia..... | Swedeland..... | 1.01 | 36.01 | 36.51 | 37.01 | 37.51 | ..... |
| Neville Island..... | 33.00 | 33.50 | 33.50 | 34.00 | ..... | Philadelphia..... | Birdsboro..... | 1.49 | ..... | ..... | ..... | ..... | 40.49 |
| Provo..... | 33.00 | 33.50 | ..... | ..... | ..... | San Francisco..... | Provo..... | 5.94 | 38.94 | 39.44 | ..... | ..... | ..... |
| Sharpsville..... | 33.00 | 33.50 | 33.50 | 34.00 | ..... | Seattle..... | Provo..... | 5.94 | 38.94 | 39.44 | ..... | ..... | ..... |
| Steelton..... | 34.00 | ..... | ..... | ..... | 39.00 | St. Louis..... | Granite City..... | 0.75 Arb. | 33.25 | 34.25 | 34.25 | ..... | ..... |
| Struthers, Ohio..... | 33.50 | ..... | ..... | ..... | ..... |  |  |  |  |  |  |  |  |
| Swedeland..... | 35.00 | 35.50 | 36.00 | 36.50 | ..... |  |  |  |  |  |  |  |  |
| Toledo..... | 32.50 | 33.00 | 33.50 | 34.00 | ..... |  |  |  |  |  |  |  |  |
| Troy, N. Y..... | 34.00 | 34.50 | 35.00 | 35.50 | 39.00 | | | | | | | | |
| Youngstown..... | 33.00 | 33.50 | 33.50 | 34.00 | ..... |  |  |  |  |  |  |  |  |

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each

0.50 pct manganese content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—\$40.50; f.o.b. Buffalo—\$41.75. Add \$1.00 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct.

Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$40.50 per gross ton, f.o.b. Lyles, Tenn. Delivered to Chicago, \$45.99. High phosphorus charcoal pig iron is not being produced.

FERROALLOY PRICES

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockwood, Tenn.
 Carload lots (bulk) \$135.00
 Less ton lots (packed) 157.00
 F.o.b. Pittsburgh 139.50
 \$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.
 Briquets—cents per pound of briquet, freight allowed, 66% contained Mn.
 Eastern Central Western
 Carload, bulk 7.00 7.25 7.30
 Ton lots 8.00 8.60 10.50
 Less ton lots 8.40 9.00 10.90

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.
 16-19% Mn 19-21% Mn
 3% max. Si 3% max. Si
 Carloads \$43.00 \$44.00
 F.o.b. Pittsburgh 47.00 48.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.
 96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
 Carload, bulk 30
 L.C.I. lots 32

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
 Carloads 32
 Ton lots 34
 Less ton lots 36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.
 Carloads Ton Less
 0.06% max. C, 0.06% 21.00 22.10 22.70
 0.10% max. C 20.50 21.60 22.20
 0.15% max. C 20.00 21.10 21.70
 0.30% max. C 19.50 20.60 21.20
 0.50% max. C 19.00 20.10 20.70
 0.75% max. C 16.00 17.10 17.70

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.
 Carload, bulk 6.65
 Ton lots 7.70
 Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet 6.75
 Ton lots 7.75
 Less ton lots 8.15

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, \$68.00 f.o.b. Keokuk, Iowa; \$65.75 f.o.b. Jackson, Ohio; \$67.00 f.o.b. Niagara Falls. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.
 Eastern Central Western
 96% Si, 2% Fe.. 15.60 17.85 19.60
 97% Si, 1% Fe.. 16.00 18.25 20.00

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si, 1 lb Si briquets.
 Eastern Central Western
 Carload, bulk 4.25 4.50 4.70
 Ton lots 5.25 5.85 6.15
 Less ton lots 5.65 6.25 6.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.
 Eastern Central Western
 25% Si 11.65 8.50
 50% Si 7.80 11.05
 75% Si 10.00 12.35
 80-90% Si 11.30 13.80
 90-95% Si 12.80 13.80

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.
 Eastern Central Western
 0.06% C 23.00 23.40 24.00
 0.10% C 22.50 22.90 23.50
 0.15% C 22.00 22.40 23.00
 0.20% C 21.75 22.15 22.25
 0.50% C 21.50 21.90 22.00
 1.00% C 21.00 21.40 21.50
 2.00% C 20.50 20.90 21.00
 65-69% Cr,
 4-9% C 15.60 16.00 16.15
 62-66% Cr, 4-6% C 16.60 17.00 17.15
 6-9% Si 16.60 17.00 17.15
 Briquets—contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.
 Eastern Central Western
 Carload, bulk.. 9.85 10.10 10.20
 Ton lots 10.75 11.65 12.25
 Less ton lots .. 11.15 12.05 12.65

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.
 High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
 Eastern Central Western
 Carload 16.70 17.10 17.25
 Ton lots 17.90 19.20 20.00
 Less ton lots .. 18.60 19.90 20.70
 Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.
 Eastern Central Western
 Carload 21.00 21.40 21.50
 Ton lots 22.35 23.00 24.20
 Less ton lots.. 23.35 24.00 25.20

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed, 97% min. Cr, 1% max. Fe.
 Eastern Central Western
 0.20% max. C.. 83.50 85.00 86.25
 0.50% max. C.. 79.50 81.00 82.25
 9.00% min. C.. 79.50 81.00 82.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.
 30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.
 Eastern Central Western
 Carloads 14.00 14.50 16.55
 Ton lots 16.10 16.85 19.00
 Less ton lots.. 17.10 17.85 20.00

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.
 16-20% Ca, 14-18% Mn, 53-59% Si.
 Eastern Central Western
 Carloads 15.50 16.00 18.05
 Ton lots 17.60 18.45 20.20
 Less ton lots.. 18.60 19.45 21.20

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone; 3.5¢ for western zone.
 Cast Turnings Distilled
 Ton lots \$1.60 \$2.35 \$2.95
 Less ton lots .. 1.95 2.70 3.75

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.
 Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
 Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.
 Eastern Central Western
 Ton lots 16.00 17.10 19.05
 Less ton lots.. 16.75 17.85 19.80

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.
 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.
 Eastern Central Western
 Ton lots 14.25 15.35 17.30
 Less ton lots.. 15.00 16.10 18.05

Other Ferroalloys

Ferrotungsten, standard, lump or ½x down, packed, f.o.b. plant
 Niagara Falls, Washington, Pa., York, Pa., per pound contained W, 5 ton lots, freight allowed... \$2.25
 Ferrovandium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.
 Openhearth \$2.70
 Crucible \$2.80
 High speed steel (Primos).. \$2.90
 Vanadium pentoxide, 88-92% V₂O₅ technical grade, contract basis, per pound contained V₂O₅ \$1.10
 Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb
 Ton lots \$2.50
 Less ton lots \$2.55
 Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo 95¢
 Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo 80¢
 Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo 80¢
 Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo 80¢
 Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti \$1.23
 Less ton lots \$1.25
 Ferrotitanium, 30-35%, 0.10% C max., ton lots, per pound contained Ti \$1.35
 Less ton lots \$1.40
 High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton.. \$142.50
 Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. (Siglo) Tenn., \$3 unitage per gross ton \$65.00
 Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
 Carload lots 17.00¢
 Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy
 Carload, bulk 5.50¢
 Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload 6.25¢
 Ton lots 6.75¢
 Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound Car lots 9.00¢
 Ton lots 9.75¢
Boron Agents
 Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.
 Ferroboreon, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.
 Eastern Central Western
 Less ton lots.. \$1.30 \$1.3075 \$1.329
 Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.
 Ton lots \$1.89 \$1.903 \$1.935
 Less ton lots 2.01 2.023 2.055
 Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.
 Less ton lots.. \$2.10 \$2.1125 \$2.1445
 Silcaz, contract basis, f.o.b. plant freight allowed, per pound.
 Carload lots 35¢
 Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.
 No. 1 87.5¢
 No. 6 60¢
 No. 79 45¢
 Bortram, f.o.b. Niagara Falls
 Ton lots, per pound 45¢
 Less ton lots, per pound..... 50¢
 Carbortam, f.o.b. Suspension Bridge, N.Y., freight allowed, Ti 15-17%, B 0.90-1.15%, Si 2.5-3.0%, Al 1.0-2.0%.
 Ton lots, per pound 8.0¢

Sir Stafford Cripps Presents National Bill for February Crisis

London

••• In the third of a new series of press conferences, Sir Stafford Cripps, President of the British Board of Trade and acting No. 2 man in the government, recently presented the first installment of the national bill for the combined coal and electricity crisis in February. It is a heavy bill. Instead of making 12,730,000 lb of cotton yarn, which was the monthly average in 1946, Britain made 6,330,000 lb in February; instead of 25,000 passenger cars in January, in February Britain made only 9900; instead of 77 locomotives made in December, in February only 41 were made.

Although goods exported in February were made before the crisis came, the vital British export drive also suffered heavily from difficulties of distribution. The value of exports rose from a monthly average of \$354,800,000 in the last quarter of 1946 to \$364,800,000 in January, but fell to \$304 million in February. Provisional figures for March show a recovery only to \$330,400,000 which is still \$24 million below the average reached at the end of last year.

The index of exports by volume (1938 = 100) is perhaps even more striking. The monthly average for the whole of 1946 was 99.4, but in the last quarter it rose to 111.2. In January it climbed to 112, but in February fell to 93. The March figure has not yet been calculated, but it is estimated that it will still be under 100.

Steel production, on which almost every other branch of industry depends, has declined, but the decline began before the end of the year. Average monthly production of steel ingots and castings for 1946 was 273,000 tons. The December output was only 264,000 tons. In January there was a slight recovery to 268,000 tons, but production slumped to 230,000 tons in February and to 219,000 tons in March. The monthly average production of steel sheets last year was 25,300 tons, and again the December output fell below it to 23,500 tons. In January production rose to 29,400 tons, but in February fell

Stresses Economic Danger As Production and Export Drive Suffer Heavily

• • •

again to 23,900 tons. The March figure is not yet known.

Sir Stafford described how serious the British situation is. "Our country, in plain terms, is in economic danger," he said. "Go out into the streets of London and you may not see much evidence of it. The buses run, there are plenty of cars about, no one is in rags or begs a crust. The shops are busy, and in spite of shortages they are better stocked than they were a year ago. People stroll in the parks or are busy planting potatoes in their spare time. It all looks normal enough.

"But look into the industrial districts of Lancashire or Yorkshire, and you will see a different picture. In two of our great industries, cot-

ton and wool, industries of whose products we and world markets are woefully short, the mills are often idle as many days a week as they work. There is not the coal to enable them to work more. They are only typical of a great many more industries throughout the country today.

"But if that is the situation today the dangers of the future are still greater. We did well enough in 1946 in getting back into our stride remarkably well, all things considered. But throughout that year—and this is a thing people fail to understand—we were cushioning ourselves against the hard facts of the situation by living on our coal stocks to keep our factories going, and on food and raw materials bought from abroad largely with borrowed money.

"We are now up against it. Our coal stocks have gone and we must build them up again as well as supply our current needs. The issue of whether we mine enough

FERRY BRIDGE:

This famous bridge on England's River Mersey between Widnes and Runcorn is slated for the wreckers torch. It dates back to 1900 and will be scrapped soon in favor of a two-deck high level structure. The original idea was a good economical one: it replaced either a drawbridge or a high level span.



coal to keep our industries going and to restock is not yet decided, and our whole economic future is in the balance. Every month we get closer and closer to the time when the American and Canadian loans will be exhausted, and we shall have to pay with our exports for all that we need to import. These are inescapable facts which we must keep in the forefront of our minds. They must condition all our actions, as well as our desires and thoughts."

Sir Stafford described Britain's manpower situation as "like an army with its strength in the wrong place—too many in some places, too few in others." It was where Britain's manpower was "thin on

the ground" that the enemy, want, was pressing the country hardest—in the mines, in the textile mills, and on the land. "While we need all the long term plans and improvements we can get—and the government is often told that it attends to them too exclusively—extra effort now is the one reinforcement immediately at our disposal. Therefore we have got to throw it in."

In saying "We work, or want," he went on, "we mean all of us—employer and employee, the worker on his own account, the housewife in her home, ministers, civil servants, and the press. Work means all kinds of work—work with brains as well as hands, at the desk and

bench, today's work, and the work we put into our plans for tomorrow.

"Not least it means the work that some of us must do to overcome the conditions that are at the moment denying work to many others. In the development areas there are thousands of unemployed waiting on the work of others in planning and building the new factories where the unemployed can find employment. In factories all over the country there are thousands on short time because the coal and raw materials they need are not there. Some may say, 'What is the use of saying "Work" when there are some who can't work?' The answer is that nothing but work by others can bring work to the workless."

Detroit Laboratory Offers Facilities For Metal Finish Testing

Detroit

••• A decision made months ago by Bud Newcomb, president of Newcomb-Detroit Co., that it would be good business to provide without charge up-to-date experimental facilities for the use of manufacturers having unsolved metal finishing, paint drying, heat processing and material heating problems is paying off.

More than a year ago large and small manufacturers started bringing their paint and metal finishing problems to the Newcomb-Detroit Experimental Laboratory, 5741 Russell St., to determine accurately before going into production certain factors that might affect the quality of their finished product.

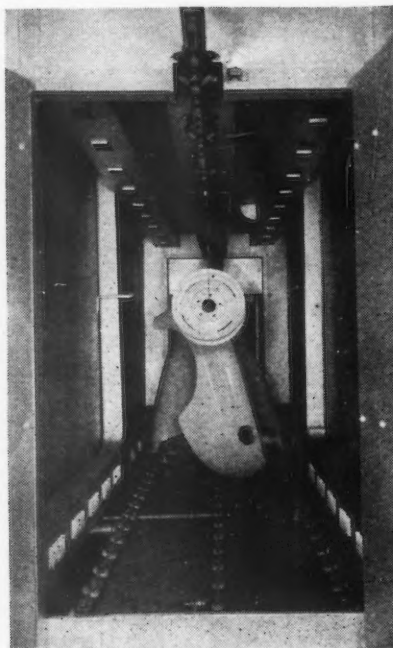
The Newcomb policy is to provide the latest and most modern laboratory facilities where interested manufacturers can conduct their own tests. Newcomb-Detroit provides the laboratory equipment and, if desired, an operator to run it. Manufacturers using the equipment bring their own parts and materials as well as personnel from their own plants to at least supervise and sometimes actually to conduct the tests.

There is no charge for the service and the only obligation of those using the Newcomb-Detroit

facilities is to furnish a copy of the test results to the laboratory. Present facilities include a 20-ft long x 6-ft wide x 9-ft high convection-type drying oven, a 20-ft long x 6-ft wide x 9-ft high radiant-type drying oven, air wash units, and water type paint spray booths.

A large automobile manufacturer was recently considering

COLORFUL TEST: Auto parts going through an oven in the Newcomb-Detroit laboratory in a test to see if the automobile company's various assembly plants can reproduce the factory colors.



finishing certain parts at its various assembly plants rather than at Detroit. The finished parts were becoming damaged in transit. However, before a decision could be made it was necessary to prove that uniformity of color could be maintained at the various assembly plants. Tests conducted at the Newcomb-Detroit laboratory proved that all the colors being considered were reproducible if the equipment was precisely controlled.

Other manufacturers have taken advantage of Newcomb's offer to investigate the drying characteristics of varnishes for electric motors. A spark plug manufacturer has made a careful investigation of the drying characteristics and resulting physical and electrical properties of certain clay products. At the present time the laboratory facilities are booked to full use for several months ahead.

Prior to the war, according to Newcomb-Detroit, the drying of synthetic enamel and other paints in gas-fired ovens then in use required approximately 45 to 60 min. Using the equipment now installed at the Newcomb-Detroit laboratory, the drying time of finished coats has been reduced to 20 to 30 min.

Relatively new to the automotive field, the radiant-type oven has been found useful where fast "bring-up time" is essential, and where the work to be heated is relatively thick and requires that the innermost parts of the work be brought up to heat rapidly.



Machinability Starts Here

• A heat of Wisconsin steel pours into the ladle where it is Sulfite-Treated. That means it will be far more machinable than ordinary steel. *And*—physical properties remain completely satisfactory.

Solve your machining problems with Wisconsin's magic metal—Sulfite-Treated Steel. Check your requirements with our sales and metallurgical departments.

WISCONSIN STEEL COMPANY

(Affiliate of International Harvester Company)

180 North Michigan Avenue

Chicago 1, Illinois

WISCONSIN Sulfite-TREATED STEEL

THE IRON AGE, May 15, 1947—127



**When Grandmother Met
Her First Tin Can**

PAINTED FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MACPHERSON



YOU WOULDN'T HAVE FOODS IN VARIETY AND ABUNDANCE —WITHOUT STEEL

Without steel, in the form of tin plate, you could not be supplied with foods essential to modern living. You would still buy groceries in the old general store, as your Grandparents did. Selection would be small. You might be offered a few items packed in cans as "something new." The cans would be crudely handmade of sheet iron coated with tin. Your favorite vegetables and fruits generally would be out of season, unless you put them up at home.

But, today, because of containers, caps and closures made of tin plate such as Jones & Laughlin Steel Corporation produces, there await you in bright, clean, food stores thousands of different wholesome, appetizing products of the fields, orchards and waters of America and foreign lands. They are packed and processed at the peak of their perfection in sterilized containers guarded by tin-coated steel. They are never out of season to you.

Tomorrow, through steel research such as Jones & Laughlin pursues continuously in production of its line of Controlled Quality steels, your family table will be served by even finer and better tin plate. Less time will be required for preparation of good breakfasts, dainty luncheons and full-course dinners. There will be more leisure to enjoy life.

JONES & LAUGHLIN STEEL CORPORATION PITTSBURGH

SALES OFFICES: Atlanta • Baltimore • Boston • Buffalo
Chicago • Cincinnati • Cleveland • Columbus • Dallas
Denver • Detroit • Harrisburg • Houston • Indianapolis
Los Angeles • Memphis • Milwaukee • Minneapolis • New
Haven • New Orleans • New York • N. Kansas City
Philadelphia • Pittsburgh • St. Louis • San Francisco • Seattle
South Bend • Syracuse • Toledo • Tulsa • Washington

CONTROLLED QUALITY STEELS

J&L STEEL

CONTAINERS

The general store of 50 years ago, neighborly and picturesque with its jumbled stocks of bulk groceries, dry goods, notions, shoes, clothing and hardware, would dismay a young woman of today out to buy food for her family table. In its stuffy, gloomy interior, vegetables and fruits were available only when in season locally. Sugar, salt, potatoes, dried apples and beans in open bags had no protection from pollution. Everyone's hands dug deep into the open cracker barrel. The molasses barrel was infested by flies. Dried fish and cheese were exposed on the counter. Pickles were dipped out of kegs. Salt mackerel was fished from open buckets. As refrigeration was unknown, tubs of butter and lard were kept in the damp cellar. There were a few cans of "cove" oysters, salmon, tomatoes, corn, peas, and peaches.

The cans Grandma bought were filled by hand at the rate of a few score per hour. Modern automatic canning machines fill several hundred cans a minute.

Fruits, fish, vegetables were broken up and shoved through a small hole in early tin-coated iron cans to fill them. Then a disc was slowly soldered in place by hand. With adoption of open-end steel-and-tin can about turn of century fruits, fish, vegetables could be canned whole or in large pieces. Change from iron to steel sheets coated with tin provided a more workable tin plate for new automatic can machinery.

Foods are cooked in cans, scientifically, at cannery. Each steel-and-tin can is a miniature "pressure cooker." No chance for fruits and vegetables to lose vitamins.

45 million cans a day are opened in this country to serve us with 2500 products.

Many farms and orchards, right near the canneries, grow finest "pedigreed" produce especially for canning. No food or flavor losses due to long transportation!

Better fruits and vegetables that we enjoy today are result of years of experiments by food packers and can manufacturers. Both do research work to improve color, size, hardness of plants used for food.

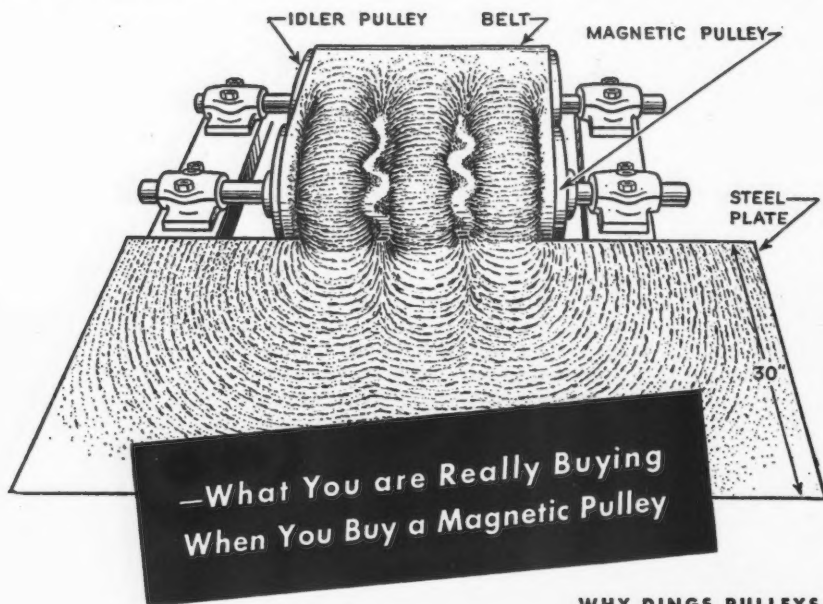
"Serve canned foods proudly" says the Can Mfrs. Institute, Inc., "and thank the modern can for the safety, convenience and economy it brings into your domestic life."

Now, oatmeal porridge precooked and packed in hermetically sealed tin cans. Serve with canned bacon, orange juice, coffee.

Healthful minerals are present in liquid found in most canned vegetables. Use them!

Meals of meats in tins, many different combinations, are on your grocer's shelves or soon will be, according to the National Meat Canners Assn. These include beef, veal, pork, ham, bacon, poultry, in combinations with vegetables for quick preparation of good meals.

"Picture" of MAGNETISM



The above illustration was made from a photograph of the pattern formed by iron filings introduced into the magnetic field surrounding a Dings High Intensity Magnetic Pulley. Note that the filings are influenced by the powerful magnetic lines of force at a distance of 30" from the pulley! You want the most powerful magnetic field and greatest iron-removing ability you can get for your magnetic separator dollar. Dings delivers you the maximum on this score by means of bronze coil covers, air-cooling and correct proportioning of steel and windings. For maximum separating power, select Dings. CATALOG 260 on request.

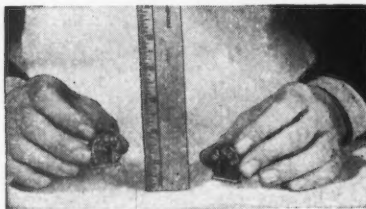
DINGS MAGNETIC SEPARATOR CO.
4709 W. McGeogh Ave.
Milwaukee 14, Wisconsin

"High Intensity"
Dings

"Separation Headquarters since 1899"

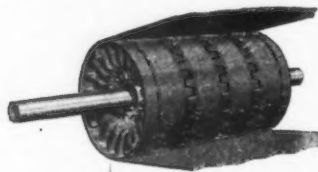
130—THE IRON AGE, May 15, 1947

WHY DINGS PULLEYS ARE MORE POWERFUL



BRONZE COIL COVERS

Make This Test! Across one horseshoe magnet place a steel keeper bar—nothing across the poles of the other. Lower the magnets slowly toward paper clips on the table. When the "unkeepered" magnet is within about an inch of the table it snaps up the clip. The magnet with the keeper doesn't pick up its clip until within about 1/4 inch because the steel keeper "short-circuits" the lines of force and reduces the intensity and depth of the magnetic field. That's why Dings uses bronze coil covers on its pulleys instead of steel. Bronze has no effect on the magnetic field.



AIR COOLED

Heat increases magnet coil resistance. This reduces amperage which in turn decreases magnetic strength. Air cooling dissipates heat generated in the coil thereby providing cooler operation and maximum magnetic strength. (Cooling is accomplished by serrated radial openings and longitudinal openings. Rotation of the pulley plus action of belt create forced air circulation.)

NEWS OF INDUSTRY

Pressed Metal Group Elect 24 to Board Of Trustees at Meeting

Cleveland

••• Twenty-four executives of the steel and metal stamping industries were elected to the board of trustees of Pressed Metal Institute at the tenth convocation of PMI trustees, which was held concurrently with the meeting of the Cleveland district members here.

New trustees of PMI are as follows:

G. F. Ahlbrandt, vice-president, American Rolling Mill Co., Middletown; Thomas L. Baker, vice-president, National Stamping Co., Detroit; J. J. Boehm, president, Boehm Pressed Steel Co., Cleveland; C. W. Custer, president (ex officio), American Stamping Co., Cleveland; Harry H. Cutler, Cutler Metal Products Co., Camden, N. J.; Robert Ferriday, Jr., Metal Industries, Inc., Indianapolis.

Also R. K. Follansbee, vice-president, Sheet Metal Specialty Div., Follansbee Steel Corp., Pittsburgh; Don Harrison, O. K. Stamping Co., Fort Wayne, Ind.; John F. Herkenhoff, president, Minster Machine Co., Minster, Ohio; Walter A. Gorrell, president, E. J. McAleer & Co., Philadelphia; H. E. Hill, secretary, Waterbury Buckle Co., Waterbury, Conn.; Carter C. Higgins, vice-president, Worcester Pressed Steel Co., Worcester, Mass.

Also W. G. Jeschke, president, Res Mfg. Co., Milwaukee; Harvey S. Johnson, vice-president, Metal Specialty Co., Cincinnati; C. W. Knobloch, president, Erie Art Metal Co., Erie, Pa.; J. A. MacMillan, vice-president, Geometric Stamping Co., Cleveland; W. H. Miller, Bossert Co., Inc., Utica, N. Y.; K. T. Norris, president, Norris Stamping & Mfg. Co., Los Angeles; G. H. Roberts, president, Detroit Stamping Co., Detroit; R. F. White, Mullins Mfg. Co., Salem, Ohio; Wilfred Williams, Acklin Stamping Co., Toledo; Lawson Adams, Wrought Washer Mfg. Co., Milwaukee; W. H. Schomburg, president, Superior Spinning & Stamping Co., Toledo, and C. A. Rooke, president, Freeway Washer & Stamping Co., Cleveland.

A PART OF SQUARE D's PARADE OF NEW DESIGNS

NEW

COMPACT (10³/₈" x 6") 225 AMPERE FRAME TYPE ML3 CIRCUIT BREAKER

**ML line of Circuit Breakers
now extended to include 225 amperes**

Contacts are non-welding, silver composition mounted on copper alloy contact arm and terminal.

Mechanism sealed in bakelite case.

All connections welded or silver-brazed.

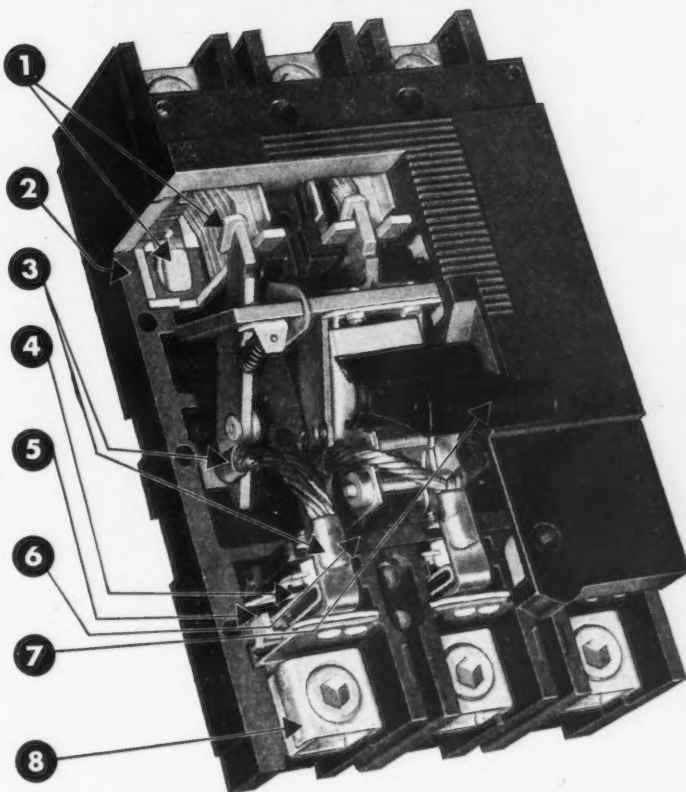
Thermal overcurrent elements trip breaker on sustained or heavy overload.

Magnetic elements trip breaker instantly on higher than normal overloads.

Bakelite trip bar actuated by overcurrent elements to trip breaker.

Automatic Tripping clearly indicated by intermediate handle position.

Special Solderless lugs with hinged tops.



Dust-resisting Enclosure



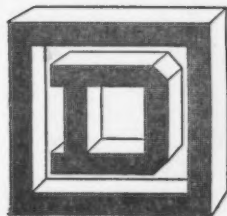
Distribution Panel

Similar in design and features to the ML2, 100 ampere frame circuit breaker, this new quick-make and quick-break, Type ML3, 225 ampere frame is available in distribu-

tion panelboards, switchboards, and in dust-resisting enclosures.

Trip ratings 125 to 225 amperes. Voltages 125-250 volts AC. 600 volts AC. 250 volts DC.

Write for Bulletin 3600 which gives complete details of both the ML2 and ML3. Address Square D Company, 6060 Rivard St., Detroit 11, Michigan.



SQUARE D COMPANY

DETROIT

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MILWAUKEE

•

LOS ANGELES

**"TAKE IT
OFF!"**



with STRIPODE

He's talking about STRIPODE, the easiest, fastest way to remove nickel deposits from base metals.

Add STRIPODE to the regular Sulphuric Acid baths in your plant and watch things speed up! Nickel comes off more completely in less time — and you use less acid to boot!

STRIPODE actually protects the base metal, prevents pitting and roughening. You'll find, too, that STRIPODE eliminates the need for polishing and severe buffing operations.

Try STRIPODE yourself. Like all the rest who use it, you'll be getting the best kind of a job and saving money besides.

S-17

THE Chemical CORPORATION
54 Waltham Ave., Springfield 9, Mass.

*Patent applied for

THE CHEMICAL CORPORATION
54 Waltham Ave., Springfield 9, Mass.

Please send me free information on STRIPODE. Also ship and bill me for one gallon trial order on money-back basis.

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Firm _____

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Iron Age

May 15

Coming in June.....

a vital announcement to every user of Cadmium, Tin or Zinc-plated finishes!

LUSTER-ON

SCORES AGAIN!

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LS-17

See for Yourself
at Booth 219
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EXPOSITION

Detroit, June 23-27

THE CHEMICAL CORPORATION
54 Waltham Ave., Springfield 9, Massachusetts

NEWS OF INDUSTRY

Secrets of Jet Engine Sought by Scientists In Bomb-Proof Dugout

Pittsburgh

• • • In a "Bomb-proof" dugout at the Westinghouse Research Laboratories scientists soon will begin to explode whirling, red-hot disks of metal in an effort to determine the maximum strength of parts for aircraft jet engines.

Disks of specially-developed alloys, 1 ft in diameter and 1 in. thick, will be heated to temperatures above 1400°F and spun at the blurring speed of 1200 mph—35,000 rpm—until they literally fly apart under the combined attack of centrifugal force and heat.

The discs will be placed in the center of a specially constructed dugout, ringed with heavy sandbags and attached to the shaft of an ultra-high speed motor which is located 10 ft below the "dugout" floor. Electric heating coils provide the high temperatures required. During testing the 32-lb disks are covered by thin steel hoods from which air has been evacuated to reduce friction. The hoods are constructed of 1/8-in. steel, so that flying fragments of the metal will easily penetrate them. Use of a heavier steel would cause serious damage to the fragments and prevent close scrutiny of the type of fracture or break involved.

As the heated disk spins, research engineers will make continuous measurement of its temperature. Methods for doing this posed a difficult problem. Since the disk is whirling at the rate of 35,000 rpm, any thermocouple attached to the outer rim would have a centrifugal pull of approximately 190,000 times its own weight and would have to be fastened strongly enough to resist a pull of many thousand pounds. The problem was solved by a special welding process.

Periodic measurements also will be made of the expanding diameter of the whirling metal disk. Under high stress and temperature, all metals tend to creep, and with the very narrow clearances in the gas turbine, a knowledge of this rate of creep is vital.

These destruction tests are aimed at revealing the ultimate

LOK-THRED STUDS are TIGHTER and STRONGER

IN ANY APPLICATION where studs are used, "LOK-THRED" Studs will lock more securely and prove stronger in both tension and torsion than American National Threads.

The "LOK-THRED" design avoids the chief weakness of ordinary interference fit, which places the metal of the receiving thread under shear and thus tends to cause a bursting or splitting action.

Note these other important advantages of "LOK-THRED" which are explained fully in the new booklet pictured here:

1. Modified American National Thread permits use of standard tools. (Page 6.)
2. Does not require selective fits. (Page 6.)
3. Locks securely and becomes tighter in service. (Page 9.)
4. Carries entire normal working load on 6° angle at root of thread under high compressive prestress. (Page 11.)
5. Does not gall when being driven nor fret in service. (Page 12.)
6. Stronger in both tension and torsion than ordinary American National Threads. (Page 12.)
7. Has much higher fatigue limits than studs with conventional threads. (Page 13.)
8. Acts as dowels and taper pins. (Page 16.)
9. Seals positively and eliminates added bosses and blind tapping. (Page 17.)
10. Re-usable and on any re-application less than one-half additional turn brings torque back to its original installation value. (Page 17.)

Write for "LOK-THRED"
Booklet for full information.



THE NATIONAL SCREW & MFG. COMPANY, CLEVELAND 4, OHIO

SAVE SUPERVISION in fitting PRECISION PARTS



YOU PROBABLY KNOW Laminum shims as assembly time savers. But have you overlooked the fact that in fitting machine parts by peeling these precision laminations, considerably less supervision is required. You have the certainty of uniform accuracy . . . with no spoilage. Your request for data invited.

Laminum shims are cut to your specifications. For maintenance work, however, shim materials are sold through industrial distributors.

Laminated Shim Company, Incorporated
76 Union Street
Glenbrook, Conn.

LAMINUM

THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

2221

134—THE IRON AGE, May 15, 1947

NEWS OF INDUSTRY

strength of alloys now used in gas-turbine rotors for jet engine application.

Such knowledge of the physical limitations of metals will be valuable both in designing present aviation gas turbines and in pointing the way to the development of new and stronger alloys.

Provides Priority Aid For Merchant Pig Iron Used in Vets Housing

Washington

• • • Priorities assistance for merchant pig iron for cast iron soil pipe and cast iron soil fittings for the Veterans Emergency Housing program was provided for through the issuance on Apr. 29 of PR 28 by the Office of the Housing Expediter. Under the order only foundries which make these products may apply under Direction 25 for authorization to place a certified order for merchant pig iron.

Applications are to be filed on Form OHE 14-186, formerly Form CPA-4570, with the Housing Expediter on or before the 15th day of the month preceding the month in which delivery is required. The old CPA form may be used until the copies of OHE 14-186 become available.

The direction prohibits authorization to place certified orders that would increase inventories. In making authorizations, the Housing Expediter, the direction said, will take into account the extent to which the applicant conserves pig iron through the use of scrap iron. It is required that each foundry fully consumes each month the pig iron which it was allowed.

Under penalties of Section 35A of the Criminal Code, a foundry may certify its order by furnishing the pig iron producer with a certificate, as provided in PR 7, declaring in effect that the order was officially authorized.

Certified orders under the direction must be treated as a rated order under PR 1, and delivery of pig iron made accordingly. A producer of merchant iron need not accept a certified order after the 25th day of the month preceding the month in which delivery is required.

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Information Free

(1) Tube Fittings and Valves:

Over 1100 sizes, types and styles of tube fittings, hose fittings, brass pipe fittings and shut-off valves are listed and described in catalog No. 350. A fitting selector chart is included and shows five of the most popular types of fittings with method of assembly, applications and advantages of each discussed. Other industrial products including tube tools are included. *Imperial Brass Mfg. Co.*

(2) Expansion Boring Tools:

Bulletin No. 303 illustrates block type boring tools and special equipment for all boring requirements. Special types include tools for rigid boring, inside grooving, recessing or chamfering, single cutter boring or line boring and railroad car wheel boring. Special engineering service is available. *Davis Boring Tool Div., Giddings & Lewis Machine Tool Co.*

(3) Valves:

A series of industrial valves for transmission of fluid power, incorporating offset body design for better flow characteristics and reducing pressure drop by 50 pct, is announced in folder. Construction features are pointed out in cutaway illustrations and engineering data and specifications are listed. Needle type construction is used in the smaller sizes, while larger sizes are of the non-rising stem type. *The Parker Appliance Co.*

(4) Carbide Grinding Tools:

Grinding innovations designed for users of tungsten carbide tools and all types of steel tools are featured in folder. Grinding wheel is attached to a one-piece steel disc known as Easymount, which is designed to increase wheel life. *Sterling Grinding Wheel Div., Cleveland Quarries Co.*

(5) Power Shovel:

Unit 514, which may be equipped as a power shovel, trencher, clamshell, crane, backhoe or dragline for all types of excavation and construction work, is shown in operation in catalog No. 46-D. Lifting magnets are available. Important details are illustrated and working ranges and specifications are included. *Unit Crane & Shovel Corp.*

(6) Surface Grinders:

Four vertical spindle surface grinders in folder of the same basic design but differing in productive capacity are listed for grinding knife and shear blades, surfacing machine parts, gear racks or small tools, and for general manufacturing and tool room requirements. Reciprocal movement of tables is controlled hydraulically with speeds adjustable up to 90 ft per min. *Hanchett Mfg. Co.*

(7) Oxygen Mask:

Chemox oxygen breathing apparatus designed to provide respiratory protection for 45 min is described in bulletin B-14. Canister is replaceable and system generates oxygen without high pressure cylinders. Breathing apparatus includes face piece with fog-free lenses, breathing tubes connected to cannister, Neoprene breathing bag and harness. Unit complete weighs 13½ lb. *Mine Safety Appliances Co.*

(8) Rubber Products:

Catalog of industrial rubber belting, gaskets, hose, fittings, packings, tubing and molded and miscellaneous products includes illustrations showing construction features. Over 9000 industrial rubber products are made by the company. Diaphragms, sander rubbers, escalator hand rails and covering for rolls are also featured. *Quaker Rubber Corp.*

(9) Carbide Cutters:

Standard carbide-tipped cutting tools, including a new ejector type tool bit, are covered in catalog No. 47. Illustrations with price lists and specifications are included on bits, threading tools, reamers, boring tools, milling cutters, end mills, saws, counterbores, solid carbide drills tipped drills, centers and ejector bits. *Super Tool Co.*

(10) Straddle Carriers:

Bulletins 44 and 65-S feature Ross series 90 and 70 straddle carriers. Several models are available in both series. Carrier sizes of series 90 models cover the range of almost any unit load transporting requirement. Series 70 have capacity of 10,000 lbs and inside turning radius of 3 ft. Full specifications are included. *Ross Carrier Co.*

(11) Machine Tools:

Detailed drawings, specifications, illustrations and cutaway views with component parts identified have been included in catalog No. 30T43 featuring horizontal boring, drilling and milling machines. Machines are designed for maximum operating efficiency during life. A wide selection of speeds and feeds have been incorporated. *Giddings & Lewis Machine Tool Co.*

(12) Flexible Shafts:

Three types of power-drive flexible shafts are presented in form 289 for heavy, medium and light work on metal, plastics, porcelain and wood. Shaft units are built up of transversely wound layers of high-carbon steel wire for strength and flexibility and are equipped with steel-end fittings. Prices are included. *F. W. Stewart Mfg. Corp.*

(13) Metal Forging:

This booklet tells a complete story of the improvement of metals by forging. Forging types and characteristics, design, process operations, metallurgy, metal defects, machining, inspection procedures and application of commercial forging metals are the principal subjects discussed. A chart on commercial tolerances is also available. *Steel Improvement & Forge Co.*

(14) Flotation Reagents:

Publication No. 15, Mineral Dressing Notes on Flotation Reagents, discusses selective separation of molybdenite from calcopyrite and other copper sulphides. New process for selective flotation of non-metallic and metallic oxide minerals and new applications as depressants for pyrite and slimy gangue where copper mineral in an ore is sensitive to cyanide. *American Cyanamid Co.*

(15) Exhaust Fans:

Buffalo industrial exhausters are pictured in bulletin No. 3576 with capacity rating tables on all models included. Fans are adjustable and reversible. Front and back plates are interchangeable and large enough so that rotor can be removed through side of the unit. Three rotors are available, one for air handling and two for materials. *Buffalo Forge Co.*

(16) Grinders:

A wide variety of tool-room grinders are listed in this bulletin. All gray iron castings used are produced in the company's foundry to insure fine, close-grained iron. Full information is contained on each type with basic specifications. Models are illustrated as well as component parts and optional equipment. *Gallmeyer & Livingston Co.*

(17) Corrosion Resistance:

Facilities for the production of corrosion resisting alloys are set forth in general catalog H which includes the Durco line of corrosion resisting process equipment. Products manufactured include pumps, valves, heat exchangers, pipe and fittings, mixing nozzles, steam jets, immersion tubes, ejectors, kettles and tanks. *Duriron Co., Inc.*

(18) Carbide and Alloy Steels:

Four catalogs describe Penn carbide and alloy steel products. Catalog C-6146 concerns sintered carbide products; E-6146 introduces a new process for engraving and embossing tungsten carbide; N-6146 features nonferrous and ferrous alloys for precision wax, graphite and sand castings; and S-6146 is devoted to cast-to-shape and forged tool steels, their analysis, heat treatment and available types. *Penn Carbide & Alloy Casting Co.*

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8/15/47
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(19) Overhead Cranes:

Design features of electric overhead traveling cranes of from 3 to 150 tons capacity are presented in catalog with information included on accessories and rebuilding services. Types include single or double hoist, bucket and magnet handling. Practically any size or type can be built to specification. *Victor R. Browning & Co., Inc.*

(20) Machine Tools:

Company operating methods, type of equipment offered, engineering facilities available and the field served are presented pictorially in this booklet. Line of products includes machine tools, presses, welders and small tools. Engineering service is available for maximum production efficiency. *Bryant Machinery & Engineering Co.*

(21) Metalworking Compounds:

Loose-leaf catalog with illustrations and data on metal working lubricants and cleaners contains six sections. Use of the products in wire drawing, tube drawing, deep drawing and stamping, cutting and grinding, cleaning and miscellaneous operations is described. One section is devoted to metric conversion data and other important machine shop information. *Apex Alkali Products Co.*

(22) Spring Tension Fasteners:

"Case History on Modernized Assembly," a folder, tells how assembly engineers modified and improved parts for more rapid assembly at lower cost, at the same time eliminating practically all threaded nuts. Fourteen types of spring tension fasteners used at 22 locations in the assembly of a new automobile heater are shown. *Timmerman Products, Inc.*

(23) All-Purpose Machine Tool:

Said to perform all machining jobs efficiently, the universal Koett machine is described in booklet as operating with equal facility when mounted on its side, inverted or in normal position. Typical operations listed are cutting keyways, milling, angle drilling, vertical or horizontal boring, reaming and internal or external grinding. *Koett Universal, Inc.*

(24) Product Design:

How a manufacturer can improve his products, operation and profits is told with pictures of typical products and case histories in DFI Planned Products Service booklet. Services are: industrial design, development engineering, experimental manufacturing, production engineering, industrial engineering, management counsel, market analysis, technical surveys, industrial research, distribution planning, retail stores and new products. *Designers For Industry, Inc.*

(25) Hydraulic Lift Truck:

Gasoline-powered hydraulic lift truck, designated the model D Truck-Man, is featured with specifications, a dimensional drawing, design points and price included in folder. Versatility is illus-

trated by a series of pictures of the truck operating in widely diversified industries. *Truck-Man, Inc.*

(26) Drilling Machines:

Four vertical, multiple spindle continuous drilling machines, designed to eliminate lost time during indexing operations, are illustrated in folder. Feeds and speeds may be predetermined. Horizontal and vertical types ranging from single spindle to twenty-four spindle units are made for a wide range of machine operations. *Davis & Thompson Co.*

(27) Bushings and Bearings:

Line of bronze and brass bushings and bearings, steel bushings, spacer tubes, spring clips, brackets and short length tubing is listed with illustrations. Information on applications of popular bushing and bearing alloys, specifications, groove patterns available and data on spacer tube sizes are also included in catalog. *National Formetal Co., Inc.*

(28) Punch Press Roll Feeds:

Automatic roll feeds for punch presses made in various types to meet almost every requirement of feeding stock from coils or strips and which are designed to fit all sizes and makes of presses are outlined in folder. Units are illustrated installed on presses. Specifications and general information is included. *La Bahn Machine & Mfg. Co.*

(29) Vertical Stroke Grinder:

Features of vertical stroke grinder designed for flat grinding as well as concave or convex grinding up to 15 degrees are presented in folder. Complete grinder is illustrated with all parts identified and important elements are illustrated individually. *O. S. Walker Co., Inc.*

(30) Hand Files:

In addition to 3566 different patterns, sizes and cuts of hand and machine files and rifflers listed in the Grobet handbook on precision Swiss files, rotary and deburring files and countersinks are presented. The catalog has been compiled to serve as a convenient purchasing guide and reference booklet. Many styles are illustrated. *Grobet File Co. of America.*

(31) Swaging Machines:

Etna series 100-150 swaging machines for tapering, sizing, reducing and forming round solids and tubing of reasonably ductile material to special shapes are listed with illustrations in booklet. Either hot or cold work may be handled without additions or changes. Cutaway views show construction features. *The Etna Machine Co.*

(32) Foundry Equipment:

A wide range of mechanized foundry equipment designed to produce better, lower cost castings, is illustrated in bulletin No. 07B6092A. Described are continuous production shakeouts, sand conditioning and reclaiming machinery, motors, drives, controls, cupola blowers, arc furnace control and accessories and mercury arc converters. *Allys-Chalmers Mfg. Co.*

(33) Chronographs:

Timers and chronographs for every purpose are covered in this folder. Features include 7-jeweled lever movement, chrome finish hinged-nickel cases, hair springs, metal balances designed to minimize contraction and expansion and non-magnetic movement. *M. J. Stillman Co., Inc.*

(34) Filters and Refills:

Two bulletins describe oil filters and filter refills. Cutaway view with explanations shows filtering principles and types available are illustrated with specifications and dimensions given. Service instructions and how to change refills are included in second bulletin which illustrates filter refills. *Briggs Filtration Co.*

(35) Metal Fasteners:

Claimed to be the only one-piece blind fastener which serves as a blind rivet, nut plate for attachment, or both, Rivnuts and their applications are outlined in a 40 page data booklet. Regular and special sizes are listed and dimensions and grip range identifications included as well as installation methods and tools. *B. F. Goodrich Co.*

(36) Diamond Tools:

Dimensional data and prices on Tru-set diamond tools and nibs have been included with illustrations in bulletin No. D-8. Published to serve as a reference guide for proper selection and use of diamond dressing tools; diamond hand tools, wheel dressers for valve grinding machines and straight shank tools and nibs are listed. *Desmond-Stephan Mfg. Co.*

(37) Insulating Varnish:

Complete technical and application data on G-E insulating varnish are given in 40-p reference book. Specifications, electrical properties, film properties, cure and aging, chemical properties and baking and air drying cycles of each type are included. Thirty-six grades are described. *Resin & Insulation Materials Div., General Electric Co.*

(38) Tool Steels:

Information concerning physical properties and characteristics of several types of tool and die steel is contained in catalog. Similar information is also presented with illustrations on carbide metal blanks and carbide tipped tools, gage blanks and bushings, alloy tool bits, tool holder bits, drill rod and other cold drawn products. *Allegheny Ludlum Steel Corp.*

(39) Blast Furnace Stove:

A bulletin is available containing information on a blast furnace stove with shell and dome construction designed for efficient installation of insulation and brickwork. Design data and drawings on a cross-circulation checker have been included and shell wall construction is discussed as well as the stove bottom design. *William M. Bailey Co.*

THE IRON AGE, New York 17, N. Y.

5/15/47

1

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For the Finest Finishes

**DEPEND ON
DEVILBISS ...
SPECIALIZED
AIR and FLUID HOSE ...**



Put an end to finish imperfections that result from hose breaking down in use. Devilbiss hose just doesn't go to pieces. Rubber particles won't slough off—clog the spray gun—ruin the spray pattern and mar the beauty and durability of the finish.

In every detail Devilbiss Hose is specifically built for its job *all the way through*—in the flexibility, gauge and solvent resisting qualities of its specially compounded liner—in the number of braid inserts and the way they are woven—in the toughness and elasticity of its wear-resistant cover. Consequently, it is better—handles easier and lasts longer.

The knowledge gained from 58 years experience developing and perfecting spray painting equipment is built into every inch of the many specialized types of Devilbiss Quality Hose. Consult your Devilbiss engineer for expert advice on your hose requirements and for helpful assistance on any and all of your spray painting problems.

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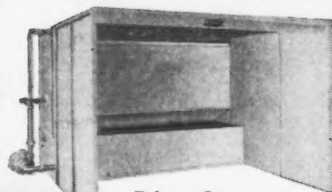


A COMPLETE DEVILBISS LINE

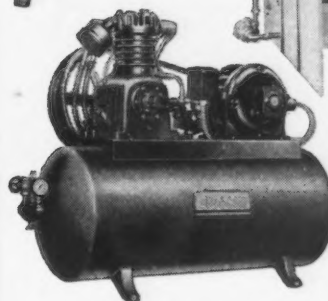
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Equipment for
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requirement.



Exhaust Systems
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Air Hose, Fluid Hose,
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means Quality in all four..

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Canadian Firm Reports Government Direction Of Output Still Needed

Montreal

• • • Arthur Cross, president of Dominion Steel & Coal Corp., dealing with operations of the company over the past year stated that the decrease in production due to strikes and continuing demand for steel for Canadian rehabilitation made it necessary for the government to further direct production and shipments of steel in accordance with domestic requirements. As a result the company was required to further curtail shipment to Great Britain.

He stated that operations of subsidiaries, other than the steel converting units, continued at a fairly satisfactory level, although shortage of supplies did not permit full operations. Operations at the Wabana Ore Mines continued at capacity through the year and 743,108 tons of ore were shipped to Britain. Negotiations for the sale of substantial tonnages for the present year have been completed and probabilities are that the mines will continue to operate to capacity throughout 1947.

Demand for steel continues unabated and, unless unforeseen circumstances arise, operations of the Sydney steel mill and the various steel subsidiaries, will continue at a high level throughout the current year.

Since the coal strike started Feb. 15 there have been various unofficial predictions that the mills, burning coal at the rate of 1 million tons annually, would be affected, but so far steel production has continued at a high rate.

Austin Motor Cuts Prices

London

• • • The Austin Motor Co, has reduced the prices of three of its new models. According to L. P. Lord, managing director of the company, the new 8 hp and 10 hp models would each be reduced by \$25.56, which included \$5.56 purchase tax. The Princess saloon, a new three and a half liter limousine originally priced at \$6000, plus \$1669.66 tax, would be reduced by \$766.66, which included \$166.66 tax.



U. S. Patent
No. 2,226,491

The
Lock Washer
is part of
the screw

HOLTITE **LOCK-TITE**
For Metal and Plastic Applications **SCREWS**

Unretouched photo shows progressive "locking bite" of washer teeth as screw is driven in. When setup, the screw head is securely locked in the material to effect a tighter, stronger, vibration-resisting fastening.

All the advantages of a separate lock-washer and screw assembly are now combined in a single cost-cutting unit. As the lock washer is an integral part of the head this time-saving screw is driven with the same speed as a regular screw. It automatically eliminates lost time and waste, as well as the hazards of driving screws without washers in applications where washers are required.

Holtite "LOCK-TITE" screws are made to meet the specific needs of user. Design of washer teeth, type of metal, hardening and tempering can be regulated to obtain the most efficient locking or binding action required for the application.

Accepted practice in many shops, this production-proved unit cuts costs while effecting tighter, stronger fastenings. Furnished with HOLTITE-Phillips Recessed Heads and slotted heads in round, flat, hex and binding head shapes.

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SCREW CO. New Bedford, Mass., U.S.A.

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QUALITY ELECTRIC FURNACE

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STEELS

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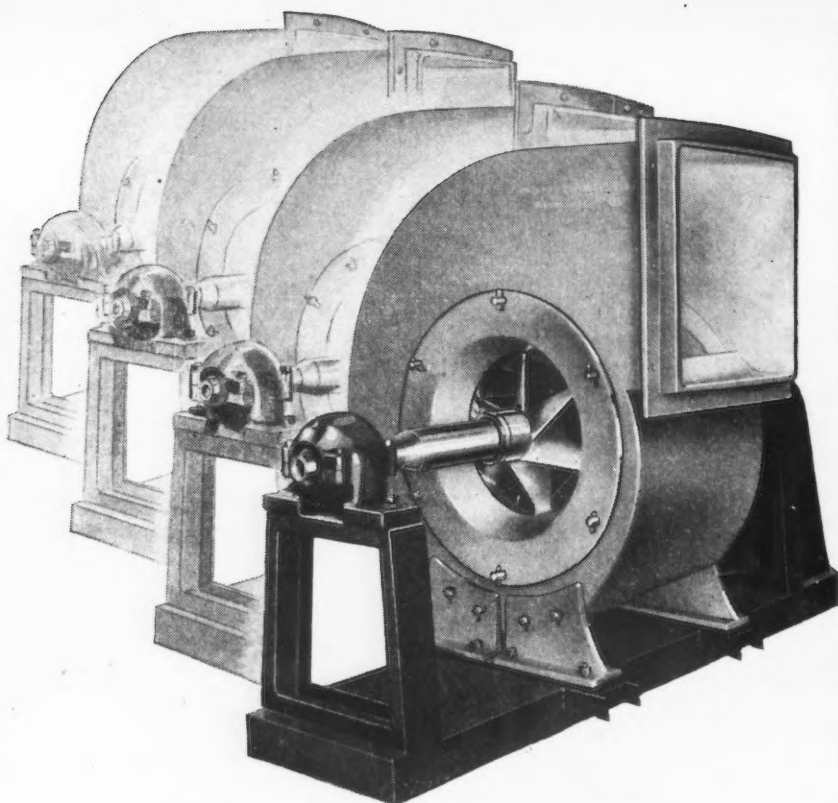
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QUALITY

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TOOL STEELS

NONE FINER

COPPERWELD STEEL COMPANY

WARREN, OHIO



MORE THAN 100 NOW INSTALLED

Renewed industrial activities and developments have brought about greater use of MICHIANA High Temperature Recirculating Fans during the past year. More than 100 have now been installed—with performance well substantiating claims of economy and long life.

With full knowledge of alloy materials—we are prepared to make the proper selection based on factors such as furnace atmosphere, temperature, thermal shock, load, etc. MICHIANA Fan design eliminates distortion and unbalanced conditions, the vital operating parts being assembled for free and independent expansion and contraction.

MICHIANA Fans will help you improve output and uniformity of product. Their long life makes them economical... Our engineers are ready to make practical recommendations...

MICHIANA PRODUCTS CORPORATION, Michigan City, Indiana.

Where Abrasion or Moisture are Factors

Where gases may contain abrasive dust—but temperatures are not excessive—abrasion-resistant alloys are available. Where resistance to corrosion is required, Michiana stainless steel castings may be employed. Thus the service indicates the alloy materials to be used.

MICHIANA HIGH TEMPERATURE, RECIRCULATING FANS



Write for
Bulletin 645

Imbalance, Not General Price Level, Is Called Current Price Cancer

New York

• • • The real cancer in our post-war price structure is the extreme imbalance within the price level rather than the general level of prices, according to an analysis of the economics of declining prices, which has just been completed by the National Industrial Conference Board.

"A pair of shoes was equivalent to 18 lb of butter in 1939, and 16 lb in 1941," the analysis states. "Today it purchases only 10 lb. A factory worker receives in exchange for his dollar only 39 pct as much farm product as he did in 1939-41, or only 54 pct as much as in 1926."

The analysis sums up current consumer-labor-industry reactions by stating: "Consumers, rightly or wrongly, believe that many commodities are priced too high and refrain from purchases in the conviction or hope that very shortly their dollars will buy more. The labor press pursues the joint course of demanding lower prices at the same time that it pleads for higher prices for services its membership sells. Industry, too, has grown highly price conscious and is intensively exploring the mechanics of price determination."

A disorganized or forced reduction of price as compared with price reduction arising from better balanced supply-demand relationships "will not necessarily correct these areas of imbalance," the study points out.

"Should the government continue its support of high farm prices or aid speculative movements through a repetition of its disorderly purchase program in the first quarter of 1947, the spread between farm and factory prices would widen rather than narrow."

One of the pillars supporting high-level activity has been "the continuation in dollar totals of an unprecedentedly high national income and gross national product. High dollar totals during the war and the accompanying high levels of savings were a direct

MAKE 1947 PRODUCTS ON . . .

1947 PRESSES

New design—improved mechanical features—greater storage space! The new 1947 refrigerator!

To manufacturers who are continuously improving product design and mechanical features, Danly offers a line of mechanical presses that will put the same efficiency into *production facilities* that have been engineered into your product. Danly Presses have the rugged construction and mechanical accuracy that makes for faster runs, more accurate stampings, longer die life, less downtime and *greater production*—the kind of performance to step up production to 1947 standards of efficiency.

The modern enclosed construction of these presses saves valuable floor space—especially in rows or batteries—keeps working parts free of dust and dirt.

Keep your productive equipment geared to the modern trend of the products you manufacture.

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THE PRESS FOR
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DANLY
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Chicago 50, Illinois

This 300-ton 4-point press is typical of the Danly line of one, two and four point models which range in size from 100 tons up—special sizes and adaptations built to customer specifications.

This Modern Production Line *means* BETTER BOLTS

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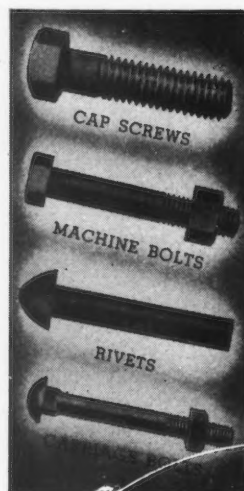


A section of the Oliver Bolt-making Department.

Dependable, Uniform OLIVER Fasteners

Dependable uniformity and high quality are features of OLIVER Industrial Fasteners that make these products your best specification. Made by modern production methods and carefully inspected before shipment, Oliver bolts, nuts, screws, rivets and special fasteners fit accurately, thread-on readily and hold firmly.

**See Your
Industrial Distributor**



OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH AND MURIEL STS. PITTSBURGH 3, PA

product of the method of financing the war through debt creation. The subsequent continuation of money income close to the war-time peak was likewise a reflection of a similar inflation in the wage and cost structure stemming from the earlier addition to the monetary supply.

It is believed that we are currently operating close to the ceiling of our productive facilities. The Economic Report of the President states that "with maximum employment in 1947. . . . Perhaps an overall increase of 5 pct might be a reasonable objective for maximum production." Even the stimulus of higher prices contributed only a 2.2 pct rise in industrial production since decontrol first emerged last summer. Whether further gains in physical output would occur under declining prices appears "highly problematical."

"Against this background of maximum utilization of current resources, any substantial reduction in the price level would mean a smaller rather than a larger output of dollars." Thus, a reduction of the price level to that prevailing in 1941, even with a 5 pct increase in production, would mean a gross national product of \$151 billion and a national income of \$129 billion.

"In addition," the analysis continues, "a substantial reduction in the price level might touch off a whole chain of downward reactions. Anticipation of lower prices may invite hand-to-mouth buying not only at the distributive level.

Publishes Anti-Trust Book

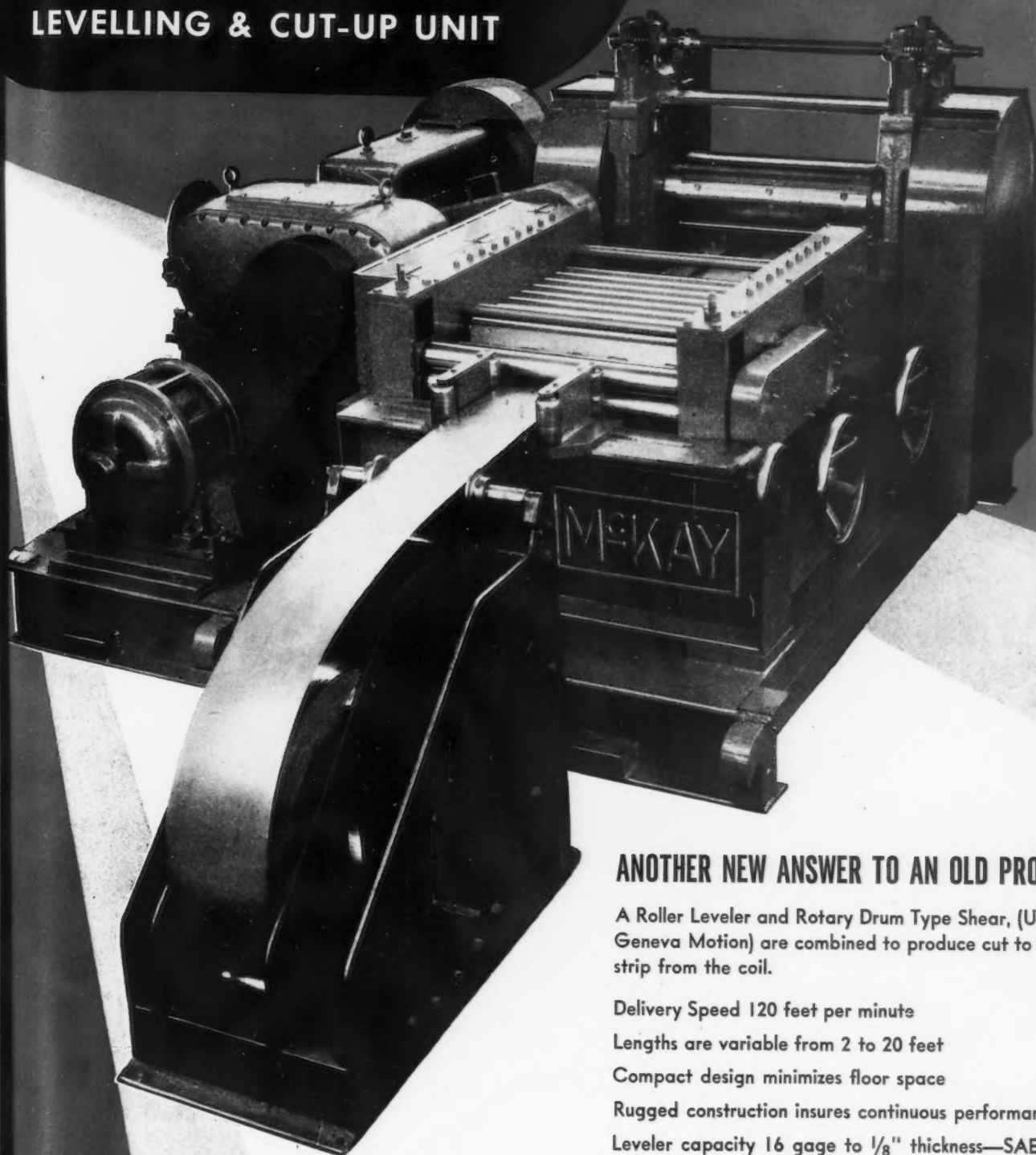
Mt. Gilead, Ohio

• • • How American business concerns can consolidate their facilities and organizations to meet foreign trade competition without violation of the anti-trust laws is explained and documented in a new book, "International Contracts and the Anti-Trust Laws," by Col. Harry Toulmin, Jr., of the bar of the Supreme Court of the U. S. and president, Hydraulic Press Mfg. Co.

Col. Toulmin, senior partner of Toulmin & Toulmin, corporation and patent attorneys, with offices in the United States and England, was recently elected chairman of the board of Tucker Corp., Chicago.

McKAY

LEVELLING & CUT-UP UNIT



ANOTHER NEW ANSWER TO AN OLD PROBLEM

A Roller Leveler and Rotary Drum Type Shear, (Utilizing Geneva Motion) are combined to produce cut to length strip from the coil.

Delivery Speed 120 feet per minute

Lengths are variable from 2 to 20 feet

Compact design minimizes floor space

Rugged construction insures continuous performance

Leveler capacity 16 gage to $\frac{1}{8}$ " thickness—SAE 1020 steel

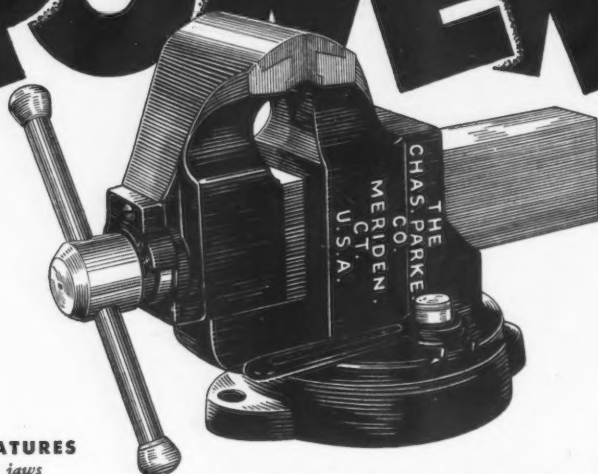
Shear capacity 16 gage x 24" or $\frac{1}{8}$ " x 12"—SAE 1020 steel

Engineered for low cost high speed production

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ENGINEERS AND MANUFACTURERS OF SHEET, TIN, AND STRIP MILL EQUIPMENT
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Tool steel jaws
—renewable.
Solid cast underportion
—no slack.
Oversize steel screw and
malleable iron nut.
Tension spring handle.
Swivel base, 360° swing,
has positive auto-type
lock.

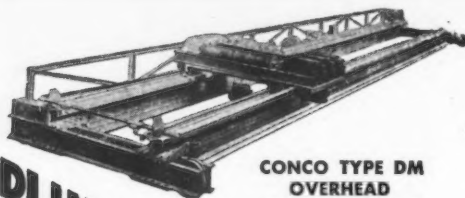
● Gripping power . . . staying power . . . that's a Parker Vise throughout its long, efficient life! But that isn't all . . . because, allied to this rugged power are in-built features that bring extra advantages to the user. Check them—they're useful!—then buy Parkers, the vises that "weld the work to the bench!" The Charles Parker Company, Meriden, Conn.

PARKER VISES

America's First Vise Maker

CONCO

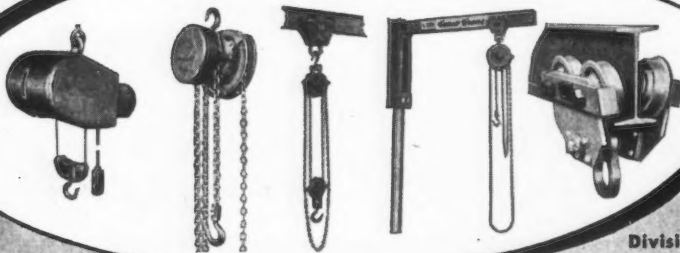
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ELECTRIC CRANE

● WRITE today for complete information on the CONCO line of hand-powered and electric cranes, hoists and trolleys—a complete line, tried and proven for over twenty years. CONCO engineers are qualified to recommend the right type of handling equipment for faster, more economical production in your shop. Write us now, and take advantage of our long experience in moving more materials, faster and at less cost.

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ENGINEERING WORKS, 15 Grove St., MENDOTA, ILL.

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NEWS OF INDUSTRY

Britain to Speed Output Of Electric Machinery

London

• • • To speed up the manufacture of heavy electrical generating machinery in Britain, a Directorate of Production has been established in the Ministry of Supply. A production officer has been appointed in each of the ministry's thirteen regions, and it is proposed to standardize the design of the machinery to facilitate production.

The directorate will insure as far as possible that materials are available, that productive capacity is coordinated, and that bottlenecks or other hindrances are removed. The Central Electricity Board report for 1946 showed that the gap between demand and capacity may widen during the next year or two. There is at present a deficiency of at least 1,500,000 kw in the capacity of generating stations. It is estimated that more than 1,000,000 kw of new capacity will be required each year. The program of construction is 771,000 kw in arrear as a result of general delays and shortages, and the increased time required for erecting new stations.

Czechs Set New Prices For Iron, Rolled Items

Prague

• • • The Czechoslovakian Supreme Price Control Office has set new prices for iron and rolled products as from Apr. 1. The readjustment of prices was found necessary, since the development of production costs whereon prices were based in October 1945 has proved less favorable than was hoped. Estimates were chiefly upset by the prices of imported ore.

Prices of raw iron for the steelworks are raised about 25 pct, and the price of raw iron for castings is lowered by about 18.5 pct. Prices of rolling mill products have been raised about 26 pct. New prices will come into force for steel tubes and fine products such as bright steel, cold-drawn ironwork, drawn wire and products thereof such as nails, wire gauze and screws. The prices of high quality steels remain unchanged.

French Favor Cartels If Properly Controlled

London

• • • The French delegation to the Geneva Trade Conference disagrees with American opinion favoring abolition of cartels. Mr. Phillip, French Minister of National Economy, and head of the French delegation at the Geneva Trade Conference, states with reference to prewar cartels and the international steel agreement in particular: "I understand our American friends, when remembering their own experience in the matter, want to exterminate these cartels completely. The French delegation will not go so far. It believes that cartels may play a certain role and that they may in a certain measure compensate for the troubles of reduced markets in small countries. I believe that they should not be forbidden, but they should be subject to precautions involving adequate publicity, international control, and domestic legislation for sanctions in case of abuses."

Two British Groups Merge

London

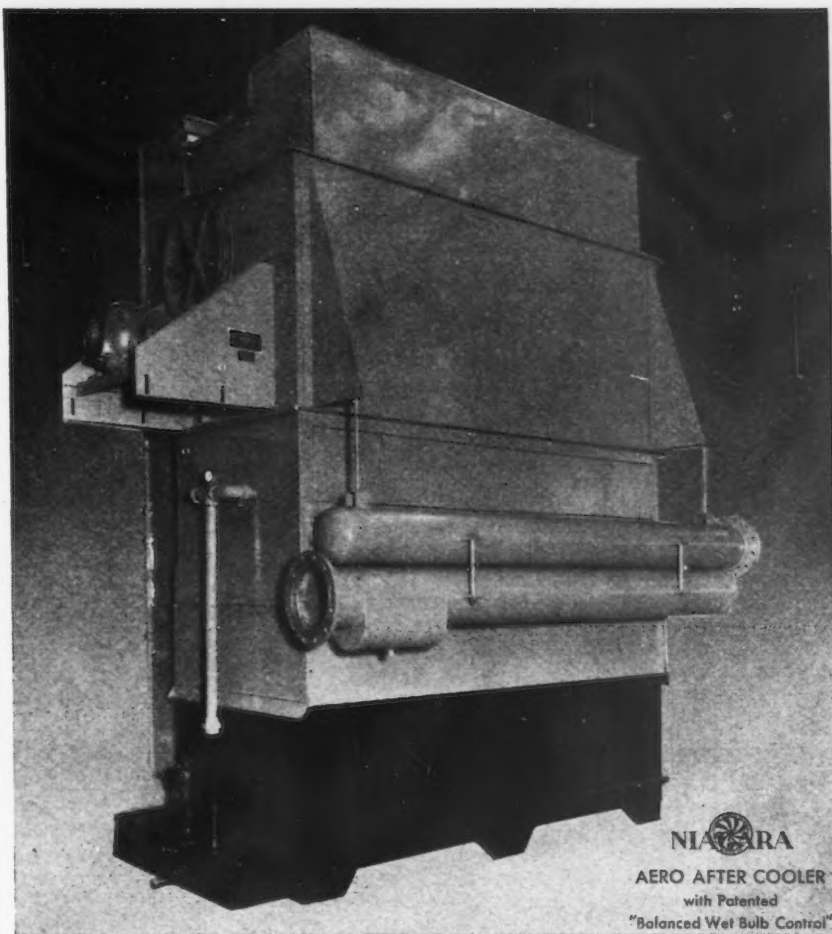
• • • Two British institutions, the Institution of Mechanical Engineers and the Institution of Automobile Engineers, became amalgamated recently. Discussions regarding the amalgamation were started early in 1946.

It was decided that as automobile engineering is essentially mechanical engineering, mechanical engineers should have their interests promoted by one powerful institution.

Transfers Order to OHE

Washington

• • • Formerly issued by CPA, an order, effective May 1, restricting the production of large sizes of cast iron soil pipe and fittings has been transferred to the Office of the Housing Expediter. It will be used to facilitate the Veterans Emergency Housing Program. It is known as Veterans' Housing Program Order 4, as amended, and restricts monthly production in sizes 5-in. or larger to 10 pct of the total production during the preceding month.



NIAGARA
AERO AFTER COOLER
with Patented
"Balanced Wet Bulb Control"

Save expensive "wear out" of air tools

• Water in compressed air lines is more than a nuisance; its cost is thousands of dollars yearly in worn-out tools and equipment, or broken air tools caused by water hammer, abrasion and washed-out lubricants.

Protect your air tools and compressed air processes with drier compressed air . . . using the NIAGARA AERO AFTER COOLER. Based on the evaporative cooling principle, it always keep the air in compressed air lines below the relative surrounding temperature, preventing condensation and, under the least favorable conditions, provides air with one-third to one-half the moisture content of water-cooled air.

Water savings will pay for the installation. Write for Bulletin 98-IA.

NIAGARA BLOWER COMPANY

Over 30 Years of Service in Industrial Air Engineering

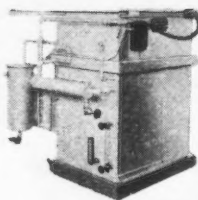
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New York 17, N. Y.

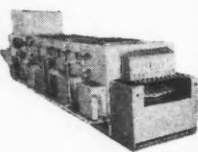
Field Engineering Offices in Principal Cities

INDUSTRIAL COOLING  HEATING • DRYING
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HUMIDIFYING • AIR ENGINEERING EQUIPMENT

For DEGREASING • WASHING RINSING • PICKLING and DRYING of METAL PARTS



DEGREASERS



PICKLERS

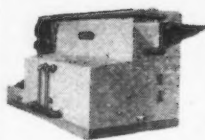
Standard and Special
Types of equipment
from the smallest to
the largest sizes for a
wide variety of metal
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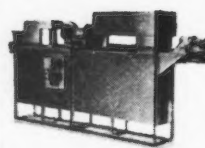
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Reduced Steel Quotas To Scottish Shipyards Seen Not Too Serious

London

• • • Effects of the steel shortage on the Scottish shipbuilding trade, and the reduced operating rate in Scottish steelmaking plants have been discussed recently in an article in the London *Financial Times*.

Scottish shipbuilders regard the reduced steel allocation as drastic but not catastrophic for the time being. A supplementary allotment was made last year when in the third quarter the industry sustained a 10 pct reduction, and it is inferred that the latest allocation is based upon the existing 90 pct quota. Supplies therefore are expected to be in the neighborhood of some 60 pct of normal tonnage.

The industry, like many others, has been faced with problems of supply, but so far shortage of steel has not caused any direct holdup. It would seem that the reduction in steel deliveries will not for the short term have any effect unless other materials and components become unexpectedly more plentiful. Eventually, of course, existing stocks will vanish, and if no additional supplies are made available the industry will face a crisis, in the opinion of the London journal.

Steel production in Scotland is currently estimated at some 80 pct of capacity, and the Minister of Supply told a Scottish Labor deputation recently that plans had been made for an immediate increase to a level of 2,520,000 ingot tons—about 197,000 tons above the highest figure previously published and which related to production in 1920.

It is hoped, therefore, that the present cut to the shipbuilding industry will be only temporary; certainly if it should be prolonged the effect in the West of Scotland in particular would be incalculable. The number of workers in the shipbuilding and general engineering trades is estimated at 130,000, but other industries which supply electrical equipment, and whose fortunes are directly linked with those in shipbuilding, bring the overall figure to a large percentage of the total employed in the region.

The acute shortage of essential materials is, however, but one factor in the increasingly anxious view

Pig Iron Production and Shipments—Net Tons*

Source: American Iron & Steel Institute

Production and Distribution by Standard Grades of Pig Iron
(Excluding Ferro Alloys)

| Standard Grades | Total Production (by grades) | | Shipments† Other than for "Own Use" (by grades) | |
|---|---------------------------------|----------------------|---|----------------------|
| | February | To date this year | February | To date this year |
| 1—Low Phos., Intermediate Low Phos. and Bessemer..... | 597,559 | 1,329,538 | 51,223 | x115,033 |
| 2—Basic..... | 3,425,202 | x7,199,235 | 137,009 | x308,923 |
| 3—Malleable..... | 188,836 | 425,254 | 180,245 | 383,424 |
| 4—Foundry..... | 247,862 | 493,613 | 223,879 | x471,145 |
| Total..... | 4,459,559 | x9,447,640 | 592,356 | x1,278,525 |
| Percent of capacity operated by blast furnaces... | 90.3 Pct | 90.7 Pct | | |

Distribution of Shipments Reported Above

| | Shipments | |
|---|-----------|----------------------|
| | February | To date this year |
| 1—To Steel Ingot Producers (Openhearth, Bessemer and Electric Furnaces) including Shipments to Independent Ingot Mold Producers..... | 155,689 | x334,161 |
| 2—All Other..... | 436,667 | x944,364 |
| Total..... | 592,356 | x1,278,525 |

x Adjusted.

* Does not include blast furnace silvery, ferrosilicon, ferromanganese, spiegel-eisen, ferrophosphorus, or electric furnace ferrosilicon, or other ferroalloys.

† "Shipments" cover merchant shipments exclusive of shipments for "Own Use." It does not include pig iron-producers' tonnage for own department or plant consumption or for transfer to other plants of same company or affiliated company.

that is being taken by competent observers of the future of the shipbuilding industry. Sharply rising costs, delays in delivery, and the drift of labor away from shipbuilding to industries that offer superficially more stable employment to skilled men, all contribute to apprehension of a repetition of their experiences in the immediate first World War era.

Already one substantial order given to a Clydeside firm has been canceled owing to unexpected delay in delivery dates, and two lines have placed on record their anxiety "whether further orders will not have to be deferred until the cost of building a new passenger liner is such as to represent a reasonable economic venture." The P. and O. group in particular has an especially ambitious program which at current prices involves the expenditure of some \$160 million on 70-odd ships laid down or contracted for with a gross tonnage approaching 485,000 tons.

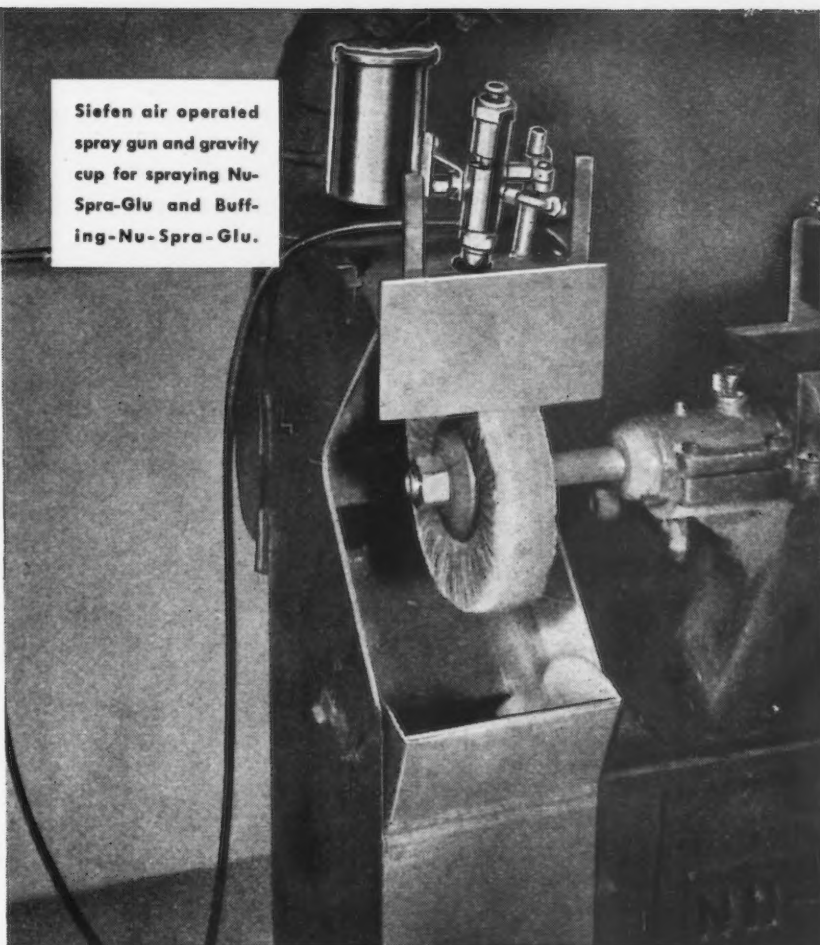
As international trade develops, provision has been made for this program to be expanded appreciably, although it does not take into consideration the withdrawal of vessels on account of age or higher than normal operating costs.

All in all, it has been computed that British shipowners have committed themselves, since the end of the war, to spend \$600 million on new ships and over \$260 million on the purchase of vessels built during hostilities for the British Government.

Numerous ships of specialized types have been built but tramp owners especially have been inclined, because of the greater uncertainties confronting them, to await developments. Not the least of their troubles has been the comparative disappearance of coal exports on which, with grain cargoes on the homeward voyage, their strength previously was founded. A contributory factor, too, is the existence of a major surplus of vessels as a result of the unprecedented wartime shipbuilding achievements, when America by agreement with Britain concentrated on the construction of merchant ships.

Today although the United States has sold more than 600 vessels to European and other countries, the American mercantile marine is still about six times its size in 1938.

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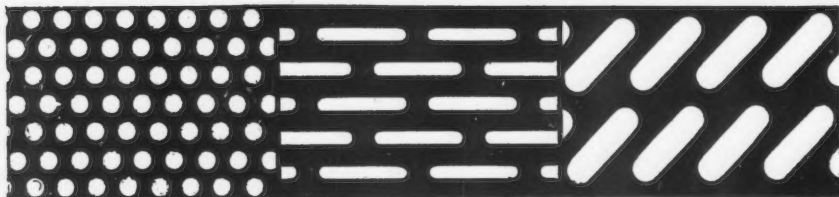


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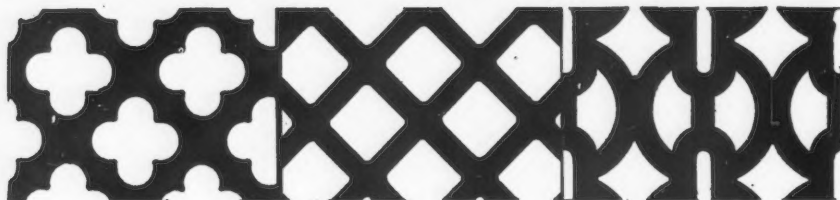
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Write for Bulletin 304

10

Tramp owners realize only too well that the final disposition of these surplus Victory and Liberty ships will play a major part in solving their domestic problems.

With few exceptions the ships which came into being in 1946 were intended to replace cargo tonnage lost during the war, and so-called passenger liners now under construction, such as the 14,000-ton Cunard-White Star *Media*, will be able to carry about 7000 tons of general cargo, compared with only 300 tons to 400 tons carried by either the *Queen Elizabeth* or *Queen Mary*. The *Media* will have accommodation for about 250 passengers on the company's North Atlantic service.

Norway today possesses the third largest merchant fleet in the world. Her current aggregate gross tonnage in commission, swollen last year by the construction in many countries of 169 vessels, totaling 300,000 gross tons, is 3,288,000 tons. Another 26 ships on order from Scottish yards, including one just announced of 17,500 tons deadweight, will add some 120,000 tons to that figure.

Yards in Sweden, Italy, Canada, Denmark and Holland, in addition to those in Scotland and Norway, have at present over a million tons of shipping on hand for the Norwegian mercantile marine, and when this program is completed, probably in the spring of next year, Norway will have regained her prewar position, so far as tonnage at her disposal is concerned, as a shipping nation. Russia is making her plans, too, although, according to the *Financial Times*, she is concentrating on the construction of 27-knot luxury liners of some 35,000 tons and upwards.

Canada is expected to offer formidable competition to British shipbuilding interests, as during the war the industry was established on a relatively firm basis for the first time in the Dominion.

Broadly, most yards and repair firms have sufficient work on hand to keep them fully occupied for at least 2 years in the absence of insoluble difficulties outside the control of the industry. The most important single factor which could prevent a high level of employment being maintained, assuming a continuous supply of essential materials, is the voluntary restriction of individual output.

Reveals \$3.7 Billion In Surplus Property Now Overseas To Be Sold

Washington

• • • About \$3.7 billion (original cost) in salable surplus property remains overseas to be sold, Secretary of State George C. Marshall disclosed in submitting the Foreign Liquidation Commission report for the first quarter of 1946.

At the same time, it was revealed that the volume of plants and equipment claimed by the United States in reparations against Germany would be relatively small. These are included in the \$3.7 billion estimate.

Of the total \$9.1 billion worth of property declared surplus to the FLC, the report stated, about \$1.2 billion remains for disposal. Additional declarations of around \$2.5 billion are expected.

Disposals through Mar. 31 amounted to approximately \$7.9 billion of which \$7.2 billion represented sales and the remaining \$700 million involved transfers to UNRRA (\$180 million), military disposals (\$66 million), donations (\$42 million) and abandonments (\$479 million). Most of the latter categories were military installations.

A return of 23.3 pct of the original cost has been realized from the sales programs.

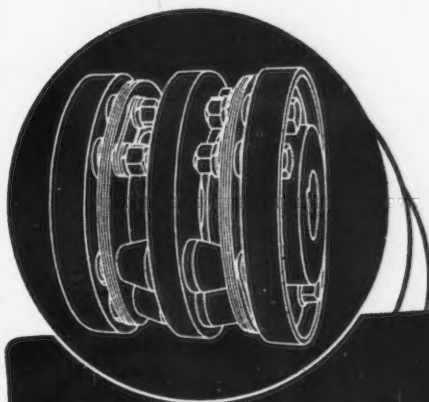
Approximately \$1 billion of the total remaining to be sold is located in Germany where more than a dozen site sales over the coming 15 months have been arranged by the FLC.

Problems of disposal of reparations property and returned lend-lease materials were outlined also in the report, the FLC having this disposal as an added responsibility.

"Reparations awards are made by an intergovernmental group," the report declared, "and its actions cannot be predicted. . . . At the present time it does not appear that the volume of plants and equipment claimed as reparations by the United States will be large but it is possible that estimates may be revised upward at any time."

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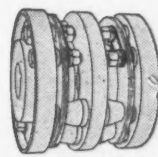
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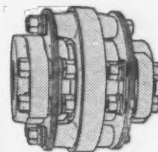
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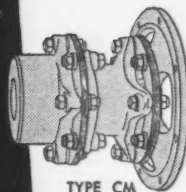
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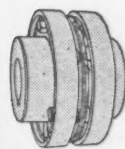
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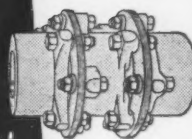
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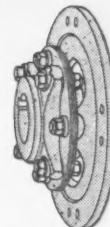
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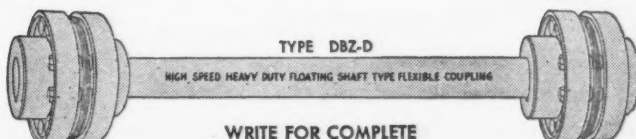
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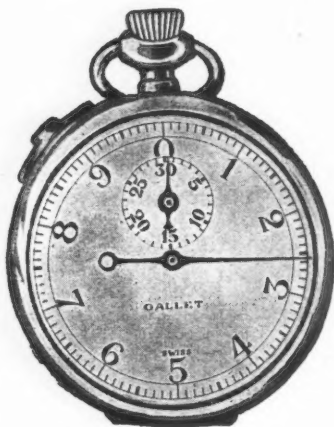
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To Complete Transfer Of Philippine Surplus Property Early in '48

Washington

• • • Transfer of authorized surplus property to the Philippine Republic under the Rehabilitation Act is now expected to be completed by early spring in 1948, Foreign Liquidation Commission officials now believe.

Rate of transfer has now been stepped up, the FLC said, with twice as much turned over to the commonwealth in the 3 months ending Feb. 28 as had been transferred during the preceding 6 months following the passage of the Act.

As of Mar. 1, it was revealed, some 45 pct or \$45 million had been transferred to the new republic of which about \$19 million represented machinery, railroad, automotive and construction equipment.

Acquisition or procurement cost to the United States of property

transferred to date represents roughly \$154 million or a valuation of approximately 30¢ on the dollar as compared with a return of about 24 pct on all foreign surplus sales.

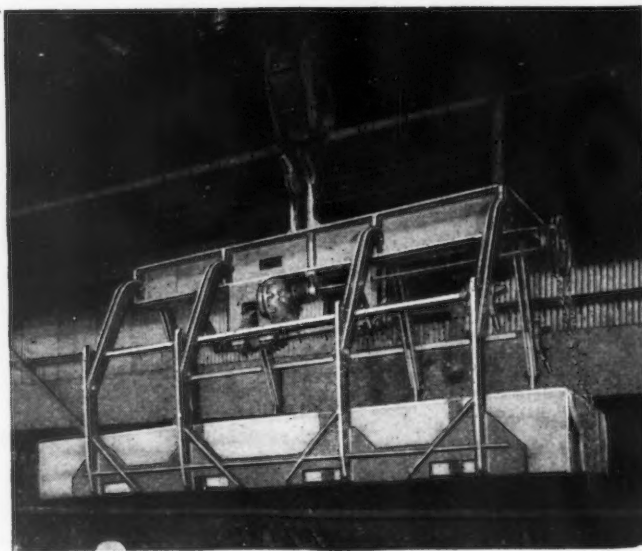
Under the Act of last May, the FLC is authorized to grant to the Philippines "surplus property in the Philippine Islands aggregating \$100 million in fair value without reimbursement to the United States."

Included in the completed transfers were 50 freight supply ships having a "fair value" of \$6 million which had been earmarked for the Philippines under the Act.

Items transferred to Mar. 1, by general nature and their valuation (in millions), are as follows:

Machinery and construction equipment, \$10.1; communication equipment, \$9.1; ships, \$6; railroad equipment, \$4.5; medical supplies and equipment, \$4.1; automotive, \$4; clothing and food, \$3.1; and, cash from sales by FLC for the Philippines, \$3.9.

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Releases German Report On Recovery Process Of Platinum Metal Group

Washington

• • • A report describing the entire German process for recovery of the platinum group metals—platinum, iridium, palladium, ruthenium, osmium and rhodium has been made available by the Dept. of Commerce. Most of the procedures observed are used in the United States but a few significant highlights are of interest to American refiners.

The Germans simplified and improved the recovery of precious metals from scrap metal and nickel refinery residues by applying ingenious variations to well known basic processes, the report indicates.

Also, the Germans do not consider the usual soda and lye precipitation processes efficient in the separation of iridium and ruthenium and prefer the hypochloride method developed by Professors E. Mylius and A. Mazzuchelli, according to the report. The hypochloride method is claimed to be especially good in the winning of platinum and admixed related metals when base metals are also present.

Products manufactured from the refined metals and alloys, such as spinnerette metals, metal powders, pen point alloys, contact alloys and jewelry and dental preparations are discussed. Electroplating baths of palladium, rhodium and platinum, and the production of mirror coatings by high-vacuum evaporation of rhodium or aluminum are described in detail because of special interest expressed by American manufacturers, the report states.

The report (PB-44661: *Precious Metal Refining and Fabrication*; photostat, \$2; microfilm, \$1; 27 pages; dated April 1946) includes photographs and drawings of vacuum evaporation equipment.

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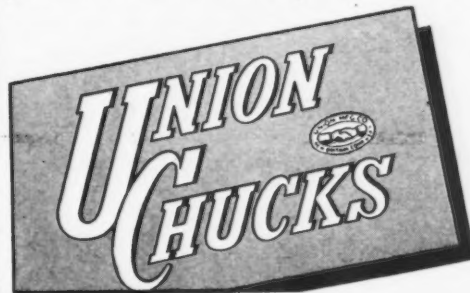
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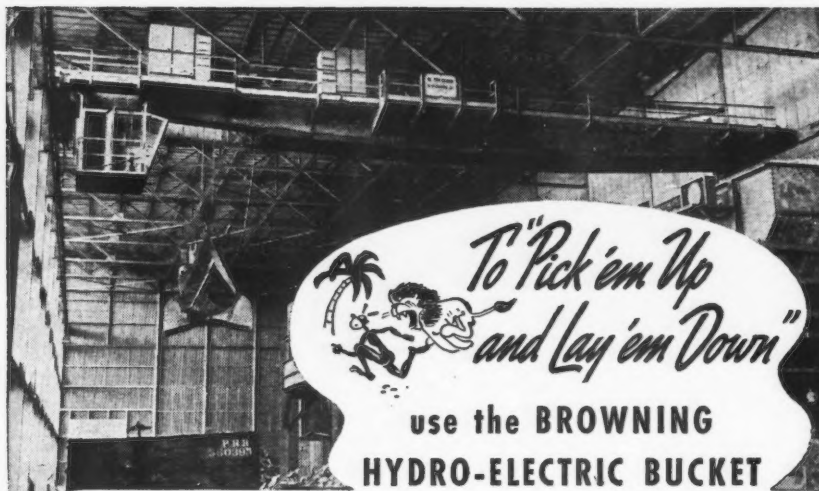
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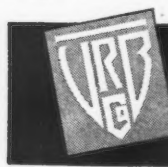
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NEWS OF INDUSTRY

Basic Magnesium Plant To Be Disposed of Soon

Washington

• • • The \$124 million Basic Magnesium project at Henderson, Nev., is expected to be put on the block for disposal about Aug. 1, according to plans now being made by WAA.

First, however, WAA has to decide as to the best method of disposal. The plant was built in 1942 to produce metallic magnesium, alloys and products including caustic soda, chlorine and fluxes but is not suited to peacetime production.

Officials say, however, that it can be converted to use by small manufacturers and a firm of private industrial engineers have been commissioned to make a study and submit a report as to whether it would be best to try to (1) dispose of the property as a whole, (2) subdivide it into smaller divisions for unit sale, or (3) continue government operation under multiple-leasing arrangement.

The report of the engineering firm is expected to be completed and in the hands of WAA early in July and orders are that advertising for bids must be ready by Aug. 1. A 60-day cut-off date will be obtained, officials said.

An inventory and appraisal of the property for sale or leasing purposes will be included in the engineering report. At the present time, several small businesses have portions of the property under lease and all the 999 houses of the property are occupied.

Polish Industry Expands

London

• • • The iron and steel industry in Poland's regained territories employs 22,000 workers, or 24 pct of those employed in the industry for the whole of Poland. Production in the regained territories in 1946 was valued at 75 million pre-war Zloty (about \$750,000), or 15 pct of all Polish production.

The largest works is the fully rebuilt freight car factory in Breslau, which will produce 7000 trucks this year and 12,000 next year. In the regained territories the iron and steel industry exports a large part of its production.

Weekly Gallup Polls

(CONTINUED FROM PAGE 105)

with its strong Communist Party, about one in every four voters do so.

Because of widespread differences in interpreting the term democracy, an international poll has been conducted to determine what the people themselves consider democracy to be, and what nations they consider democratic by their own definitions.

It was found that the United States, England, Switzerland and Sweden were given the highest votes as democratic countries in a list of approximately a dozen. Russia, Yugoslavia, Poland and Spain ranked low in the poll.

Other highlights were as follows:

(1) More than one-third of the people of the United States feel that there is no democracy in England, and about the same number of Britishers agree with that. In the case of American attitudes, the fact that Britain still has a king may have had some influence.

(2) The French voters put Switzerland, the United States and England ahead of their own country in terms of the democratic way of life. Only two-thirds of the French people think France has a democracy. This contrasts with the United States, where nearly nine in every ten say we have a democracy.

The survey in the United States was conducted by the American Institute of Public Opinion. Affiliates in other countries conducted the same or a similar survey. Results follow:

"Do you think there is democracy in the following countries?"

| Results in U. S. A. | Yes | | No | | Opin. |
|---------------------|-----|-----|-----|-----|-------|
| | Pct | Pct | Pct | Pct | |
| U. S. A. | 88 | 8 | 4 | | |
| England | 48 | 35 | 17 | | |
| France | 32 | 40 | 28 | | |
| Holland | 28 | 30 | 42 | | |
| Argentina | 12 | 59 | 29 | | |
| Poland | 9 | 63 | 28 | | |
| Russia | 5 | 83 | 12 | | |
| Yugoslavia | 4 | 59 | 37 | | |
| Spain | 4 | 72 | 24 | | |

| Results in France | Yes | | No | | Opin. |
|-------------------|-----|-----|-----|-----|-------|
| | Pct | Pct | Pct | Pct | |
| Switzerland | 82 | 4 | 14 | | |
| U. S. A. | 74 | 12 | 14 | | |
| England | 71 | 15 | 14 | | |

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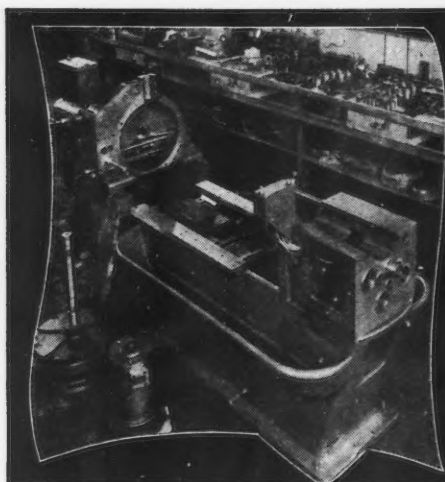
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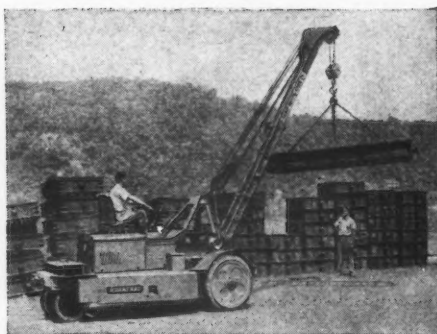


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154—THE IRON AGE, May 15, 1947

NEWS OF INDUSTRY

| | | | |
|------------|----|----|----|
| France | 65 | 22 | 13 |
| Russia | 24 | 57 | 19 |
| Poland | 16 | 40 | 44 |
| Yugoslavia | 15 | 39 | 46 |
| Greece | 6 | 50 | 44 |
| Spain | 2 | 86 | 12 |

Results in Sweden

| | Yes Pct | No Pct | No Opin. |
|----------|------------|-----------|-------------|
| Sweden | 95 | 5 | |
| England | 86 | 14 | |
| U. S. A. | 85 | 15 | |
| Finland | 65 | 35 | |
| France | 59 | 41 | |
| Poland | 25 | 75 | |
| Russia | 14 | 86 | |
| Spain | 3 | 97 | |
| None | 2 | 98 | |

Results in Holland

| | Yes Pct | No Pct | No Opin. |
|-------------|------------|-----------|-------------|
| Netherlands | 67 | 15 | 18 |
| England | 68 | 10 | 22 |
| U. S. A. | 59 | 15 | 26 |
| Belgium | 51 | 16 | 33 |
| France | 47 | 19 | 34 |
| Russia | 11 | 66 | 23 |
| Spain | 3 | 70 | 27 |

Results in Norway

| | Yes Pct | No Pct | No Opin. |
|----------|------------|-----------|-------------|
| U. S. A. | 74 | 5 | 21 |
| Norway | 70 | 12 | 18 |
| England | 69 | 8 | 23 |
| France | 53 | 10 | 37 |
| Poland | 14 | 33 | 53 |
| Russia | 11 | 67 | 22 |
| Spain | 1 | 79 | 20 |

In England no list was presented, the voters being merely asked whether they think England has democracy. The vote was yes 50 pct, no 32 pct, no opinion 18 pct.

In Canada, the vote on whether Canadians have a democracy was yes 57 pct, no 15 pct, no opinion 14 pct, with another 14 pct giving qualified answers.

When voters in all the countries were asked, "What does the term democracy mean to you?" the results fell into three main categories.

The largest number said it means "government by the people," or the right of the people to determine who shall govern them, including the right of opposition parties to free expression and political activity. It was on those grounds presumably that so many rated Spain, Russia, and Yugoslavia unfavorably.

The second main definition of democracy, in the eyes of the peoples in the various countries polled, is freedom, especially freedom of speech and of assembly.

The third is equality—absence of discrimination or distinction between classes, groups, or individuals.

The London Economist

(CONTINUED FROM PAGE 109)

Federal labor legislation since 1933 has been limited to labor regarded as affecting interstate commerce, but since the late '30s Supreme Court decisions have vastly enlarged that rubric.

Doubt remains whether the states will have the right to legislate for workers employed in interstate commerce now that Congress has done so. But sponsors of the "right-to-work" laws claim they do, and state attorneys-general and assistants from 15 states petitioned Congress to say so in so many words. Several lawsuits to test the constitutionality of state "right-to-work" laws are before the courts now.

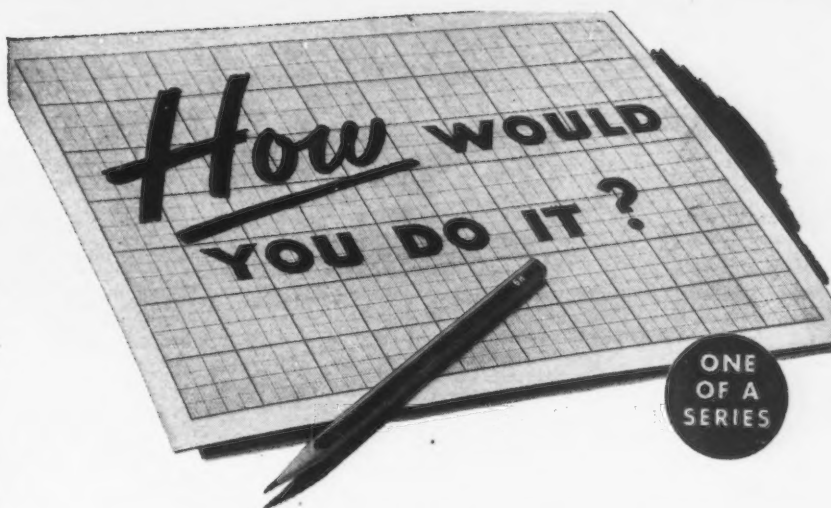
Whatever happens to federal legislation, one-third of the 48 states has determined to control their own labor problems, and until their laws are repealed or declared unconstitutional, they can put them into effect locally.

Mr. Dewey, governor of New York, appealed for the labor vote in the 1944 presidential election on the ground that the worst working conditions, the worst labor laws, the worst anti-labor politicians were in the Democratic South. Republican states had passed the advanced labor codes; Republican states had the successful union movements.

That was true—but about all it means is that the industrial Northeast has been Republican most of the time—Republican not so much because of working men's votes (though they were important at times and always had to be courted) as because of the steadfast Republicanism of the employers, black-coated workers, rural and small-town people.

The system of representation favors the rural and small-town areas. Iowa's 2½ million, Nevada's 100,000, have the same two senators apiece in Washington as New York's 13½ million; and in the state legislatures the same sort of disparity is common.

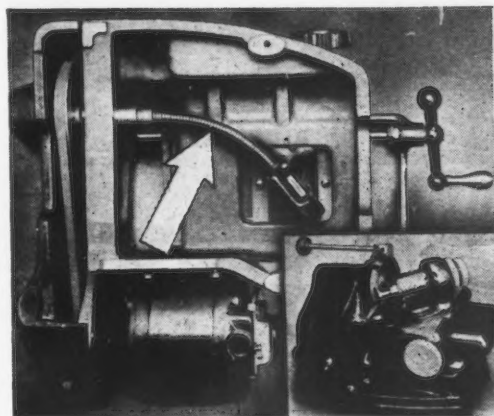
Some states have not revised the voting constituencies for their lower houses for years, so that rotten boroughs are not confined to the Senate. Georgia's "country



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NEWS OF INDUSTRY

unit" system for electing its governors is not common, but in state legislatures rural counties quite generally have more than their proportionate share of votes through rules fixing the maximum and minimum representation for any county.

Iowa is the most rural state in the union if you go by percentage of area in cultivation. But it has actually more labor union members than farm organization members, and almost as many union members as farmers altogether.

But this could hardly be deducted from the way the legislature and the state's delegation in Congress behave. The State Farm Bureau Federation won most of the positive legislation it asked for; the labor unions fought in vain against hostile restrictions on their own activities, and their support in general welfare bills was a handicap rather than an advantage.

Transonic Rocket To Be Tested Off English Coast

London

• • • The Vickers transonic pilotless rocket is to be launched from a Mosquito aircraft flying at 36,000 ft over an area 14 miles west of the Scilly Isles, in forthcoming experiments to obtain information on the effects of the barrier of air resistance encountered as the speed of sound is approached.

After release from the Mosquito, the 11-ft model, which weighs 900 lb fully loaded, will glide down to 35,000 ft before its rocket motor is switched on. This small motor, which is an improvement on the one used in German rocket-propelled fighters during the war, is estimated to develop 2000 hp at 900 mph. The model will fly under its own power for about 70 sec, during which time it will travel about 15 miles.

When its 300 lb of fuel is exhausted the model will decelerate and again pass through the speed of sound, so there will be a double chance of getting readings in the transonic region before the automatic controls operate to crash the model into the sea. It will dive steeply into the sea as a precautionary measure. If allowed to descend in a normal glide the rocket might cover 120 miles and cause danger to shipping and aircraft.